

STIC Database Tracking Number: 340008

**To: Shahid R. Merchant**  
**Location: KNX 4B87**  
**Art Unit: 3694**  
**Date: August 18, 2010**  
**Case Serial Number: 10/697,541**

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## Search Notes

Dear Examiner Merchant:

Please find attached the results of your search for the above-referenced case. The search was conducted in Dialog, Proquest, and EBSCOhost.

I have listed *potential* references of interest in the first part of the search results. However, please be sure to scan through the entire report. There may be additional references that you might find useful.

If you have any questions about the search, or need a refocus, please do not hesitate to contact me.

Thank you for using the EIC, and we look forward to your next search!

<b>I. POTENTIAL REFERENCES OF INTEREST.....</b>	<b>3</b>
A. Dialog.....	3
B. Additional Resources Searched.....	3
<b>II. INVENTOR SEARCH RESULTS FROM DIALOG .....</b>	<b>4</b>
<b>III. TEXT SEARCH RESULTS FROM DIALOG .....</b>	<b>5</b>
A. Full-Text Databases .....	5
<b>IV. TEXT SEARCH RESULTS FROM DIALOG .....</b>	<b>26</b>
A. Abstract Databases .....	26
<b>V. ADDITIONAL RESOURCES SEARCHED .....</b>	<b>47</b>

**I. Potential References of Interest**

**A. Dialog**

No significant results.

**B. Additional Resources Searched**

Financial Times FullText (via ProQuest): No relevant results.

Internet & Personal Computing Abstracts (via EBSCOhost): No relevant results.

## II. Inventor Search Results from Dialog

**Dialog eLink:** [Order File History](#)

30/5/1 (Item 1 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0014716586 *Drawing available*

WPI Acc no: 2005-064203/200507

Related WPI Acc No: 2003-746901; 2003-802658

XRPX Acc No: N2005-055642

**Option limit order trading activity monitoring and evaluating method, involves using option market data in real time to identify trade-through and trade-at transactions relevant to order and generating alert based on transactions**

Patent Assignee: BUCKWALTER A M (BUCK-I); GOLOVINSKY P (GOLO-I); XENAKIS J P (XENA-I)

Inventor: BUCKWALTER A M; GOLOVINSKY P; XENAKIS J P

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20040254877	A1	20041216	US 2002246562	A	20020918	200507	B
			US 2002428462	P	20021122		
			US 2003697541	A	20031030		

Priority Applications (no., kind, date): US 2002246562 A 20020918; US 2002428462 P 20021122; US 2003697541 A 20031030

### Alerting Abstract US A1

NOVELTY - The method involves identifying an option **limit order** having information identifying a customer, information identifying a desired option, and information indicating a limit price. A real time feed of option market data is received. The option market data is used in real time to identify a trade-through transaction and a trade-at transaction relevant to the order. An alert is generated based on the identified transactions.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- an apparatus of generating **quality** data associated with an option **limit order**
- a **limit order protection** system.

USE - Used for monitoring and evaluating option **limit order** trading activity.

ADVANTAGE - The generation of the alert based on the identified transactions avoids the situation in which the **limit order** remains unfilled at one exchange even **though** a transaction occurred at another exchange at a better or equal price.

DESCRIPTION OF DRAWINGS - The drawing shows a block diagram of a trading network.

112 Market data

200 Trading system

202 Execution core

400 Router

500 **Limit order** protection system

**Title Terms** /Index Terms/Additional Words: OPTION; LIMIT; ORDER; TRADE; ACTIVE; MONITOR ; EVALUATE; METHOD; MARKET; DATA; REAL; TIME; IDENTIFY; THROUGH; TRANSACTION; RELEVANT; GENERATE; ALERT; BASED

### III. Text Search Results from Dialog

#### A. Full-Text Databases

File 20:Dialog Global Reporter 1997-2010/Aug 18  
(c) 2010 Dialog  
File 15:ABI/Inform(R) 1971-2010/Aug 17  
(c) 2010 ProQuest Info&Learning  
File 610:Business Wire 1999-2010/Aug 18  
(c) 2010 Business Wire.  
File 810:Business Wire 1986-1999/Feb 28  
(c) 1999 Business Wire  
File 613:PR Newswire 1999-2010/Aug 18  
(c) 2010 PR Newswire Association Inc  
File 813:PR Newswire 1987-1999/Apr 30  
(c) 1999 PR Newswire Association Inc  
File 634:San Jose Mercury Jun 1985-2010/Aug 17  
(c) 2010 San Jose Mercury News  
File 624:McGraw-Hill Publications 1985-2010/Aug 18  
(c) 2010 McGraw-Hill Co. Inc  
File 9:Business & Industry(R) Jul/1994-2010/Aug 17  
(c) 2010 Gale/Cengage  
File 275:Gale Group Computer DB(TM) 1983-2010/Jul 07  
(c) 2010 Gale/Cengage  
File 621:Gale Group New Prod.Annou.(R) 1985-2010/Jun 28  
(c) 2010 Gale/Cengage  
File 636:Gale Group Newsletter DB(TM) 1987-2010/Aug 17  
(c) 2010 Gale/Cengage  
File 16:Gale Group PROMT(R) 1990-2010/Aug 17  
(c) 2010 Gale/Cengage  
File 160:Gale Group PROMT(R) 1972-1989  
(c) 1999 The Gale Group  
File 148:Gale Group Trade & Industry DB 1976-2010/Aug 17  
(c) 2010 Gale/Cengage  
File 348:EUROPEAN PATENTS 1978-201032  
(c) 2010 European Patent Office  
File 349:PCT FULLTEXT 1979-2010/UB=20100812|UT=20100805  
(c) 2010 WIPO/Thomson  
File 625:American Banker Publications 1981-2008/Jun 26  
(c) 2008 American Banker  
File 268:Banking Info Source 1981-2010/Jul W4  
(c) 2010 ProQuest Info&Learning  
File 626:Bond Buyer Full Text 1981-2008/Jul 07  
(c) 2008 Bond Buyer  
File 267:Finance & Banking Newsletters 2008/Sep 29  
(c) 2008 Dialog

Set	Items	Description
S1	19690	(LIMIT OR CONDITIONAL OR CONTINGENT OR STOPLIMIT) (2W) ORDER? ?
S2	1002	(TRADE()AT? ? OR TRADE()THROUGH? ? OR PARTLY OR PARTIAL?? OR "NOT"()FILLED OR UNFILLED) (5N) (ORDER? ? OR TRANSACTION? ? OR BID? ? OR ASK? ? OR QUOTE? ? OR QUOTATION? ? OR RFQ? ? OR CONTRACT? ?)

S3	75	S2 (10N) (MONITOR? OR TRACK? OR DETECT? OR WATCH? OR FOLLOW? OR OBSERV? OR RECORD? OR REAL()TIME)
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S4 2195 (MEASUR? OR BENCHMARK? OR GAUGE? ? OR GAUGING OR YARDSTICK? OR  
REFERENCE()POINT? OR METRIC? ? OR STANDARD? ?) (10N) (PERFORMANCE OR EFFECTIVE? OR  
SUCCESS??? OR SUCCEED??? OR RESULT??? OR EFFICAC? OR RESULT OR RESULTS OR  
OPERATION?? OR EFFICIENCY OR EFFICIENT OR EFFECTIVENESS OR EFFECTUALITY OR  
EFFECTUALNESS OR EFFICACIOUSNESS OR RELIAB? OR EXECUTION OR ABILITY)

S5 6196 (NUMBER OR AMOUNT OR MANY OR VOLUME OR COUNT? ? OR COUNTING OR  
QUANTITY OR QUANTITIES OR PERCENTAGE OR RATE) (5N) (ORDER? ? OR TRANSACTION? ? OR  
BID? ? OR ASK? ? OR QUOTE? ? OR QUOTATION? ? OR RFQ? ? OR CONTRACT? ? OR  
DERIVATIVE? ? OR FUTURE? ? OR OPTION? ? OR COMMODITY OR COMMODITIES OR INSTRUMENT?  
? OR SHARE? ?)

S6 1035 S5 (5N) (FILL??? OR ACKNOWLEDG? OR COMPLET? OR SATISFY? OR  
SATISFIE? ? OR EXECUT? OR PROCESS?)

S7 0 AU=(BUCKWALTER, A? OR BUCKWALTER A? OR BUCKWALTER (1N) (A OR ALAN)  
OR XENAKIS, J? OR XENAKIS J? OR XENAKIS (1N) (J OR JOHN) OR GOLOVINSKY, P? OR  
GOLOVINSKY P? OR GOLOVINSKY (1N) (P OR PAVEL))

S8 280816 IC=(G06F OR G06Q)

S9 11 S1 (S) S3

S10 4 S9 (S) S4-S6

S11 1 S10 FROM 348,349

S12 423 S1 (S) S2

S13 28 S12 (S) S4

S14 9 S13 (S) S6

S15 4 S14 FROM 348,349

S16 4 S15 NOT S11

S17 14 S4 (5N) S6

S18 9 S17 FROM 348,349

S19 7 S18 NOT (S11 OR S16)

S20 25 S10 OR S14 OR S17

S21 12 S20 FROM 348,349

S22 13 S20 NOT S21

S23 10 RD (unique items)

S24 169 S1 (10N) S6

S25 51 S24 FROM 348,349

S26 118 S24 NOT S25

S27 58 S26 NOT PY>2002

S28 40 RD (unique items)

S29 39 S28 NOT S23

S30 4 S29 AND S2

S31 35 S29 NOT S30

S32 37 S4 (30N) S6

S33 1 S32 AND S31

S34 12 S32 (S) S1

S35 4 S34 FROM 348,349

S36 8 S34 NOT S35

S37 5 S36 NOT (S23 OR S30 OR S31 OR S33)

**Dialog eLink:** [Order File History](#)

11/3K/1 (Item 1 from file: 349)

DIALOG(R)File 349: PCT FULLTEXT

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**ENHANCED PARIMUTUEL WAGERING**  
**PARI DU TYPE PARI MUTUEL AMELIORE**

**Patent Applicant/Patent Assignee:**

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 2 Hudson Place, Hoboken, NJ 07030; US; US (Residence); US (Nationality); (For all designated states except: US)

**Patent Applicant/Inventor:**

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	Country	Number	Kind	Date
Patent	WO	200519986	A2-A3	20050303
Application	WO	2004US25434		20040806
Priorities	US	2003640656		20030813

**Designated States:** (All protection types applied unless otherwise stated - for applications 2004+)

AE; AG; AL; AM; AT; AU; AZ; BA; BB; BG;  
 BR; BW; BY; BZ; CA; CH; CN; CO; CR; CU;  
 CZ; DE; DK; DM; DZ; EC; EE; EG; ES; FI;  
 GB; GD; GE; GH; GM; HR; HU; ID; IL; IN;  
 IS; JP; KE; KG; KP; KR; KZ; LC; LK; LR;  
 LS; LT; LU; LV; MA; MD; MG; MK; MN; MW;  
 MX; MZ; NA; NI; NO; NZ; OM; PG; PH; PL;  
 PT; RO; RU; SC; SD; SE; SG; SK; SL; SY;  
 TJ; TM; TN; TR; TT; TZ; UA; UG; US; UZ;  
 VC; VN; YU; ZA; ZM; ZW;

[EP] AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES;  
 FI; FR; GB; GR; HU; IE; IT; LU; MC; NL;  
 PL; PT; RO; SE; SI; SK; TR;

[OA] BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW;  
 ML; MR; NE; SN; TD; TG;

[AP] BW; GH; GM; KE; LS; MW; MZ; NA; SD; SL;  
SZ; TZ; UG; ZM; ZW;

[EA] AM; AZ; BY; KG; KZ; MD; RU; TJ; TM;

**Language** Publication Language: English

Filing Language: English

Fulltext word count: 182513

#### Detailed Description:

...the - 49 observation period. For example, a DBAR contingent claim might settle against an average of market closing prices during a time interval that is **partially** randomly determined, as opposed to a market closing price on a specific day.

Additionally, in preferred embodiments incentives can be employed in order to induce...achieving a profit equal to the premium should the digital, option expire out of the money, and suffering a net loss equal to the digital **option** payout (or the notional) less the premium received should the digital option expire in the money.

In a preferred embodiment of a digital options exchange using the DBAR contingent claims methods and systems of the present invention, the mechanics of "selling" involves - 171 converting such "sell" orders to complementary buy **orders**. Thus, a sale of the MSFT digital put options with strike price equal to 50, would be converted, in a preferred DBAR DOE embodiment, to a complementary purchase of the 50 strike digital call **options**. A detailed explanation of the conversion process of a "sale" to a complementary buy order is provided in connection with the description of FIG. 15... ..by interpreting the amount to be "sold" in a manner which is somewhat different from the amount to be bought for a DBAR DOE buy **order**. In a preferred embodiment, when a trader specifies an amount in an order to be "sold," the amount is interpreted as the total amount of...

**Dialog eLink:** [Order File History](#)

16/3K/3 (Item 3 from file: 349)

DIALOG(R)File 349: PCT FULLTEXT

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#### DERIVATIVES HAVING DEMAND-BASED, ADJUSTABLE RETURNS, AND TRADING EXCHANGE THEREFOR

PRODUITS DERIVES PRESENTANT DES RENDEMENTS AJUSTABLES BASES SUR LA DEMANDE ET ECHANGES COMMERCIAUX ASSOCIES

#### Patent Applicant/Patent Assignee:

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- **WEISS Charles A(et al)(agent)**  
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	Country	Number	Kind	Date
Patent	WO	200385491	A2-A3	20031016
Application	WO	2003US7990		20030313
Priorities	US	2002115505		20020402

**Designated States:** (Protection type is "Patent" unless otherwise stated - for applications prior to 2004)

AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG,  
BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ,  
DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,  
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD,  
SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,  
UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

[EP] AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES;  
FI; FR; GB; GR; HU; IE; IT; LU; MC; NL;  
PT; RO; SE; SI; SK; TR;

[OA] BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW;  
ML; MR; NE; SN; TD; TG;

[AP] GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ;  
UG; ZM; ZW;

[EA] AM; AZ; BY; KG; KZ; MD; RU; TJ; TM;

**Language** Publication Language: English

Filing Language: English

Fulltext word count: 136258

#### Claims:

...the observation period. For example, a DBAR contingent claim might settle against - 36 an average of market closing prices during a time interval that is **partially** randomly determined, as opposed to a market closing price on a specific day ZD. Additionally, in preferred embodiments incentives can be employed in order... First, a preferred form of DBAR contingent claim entails limited liability investing. Investment liability is limited in these embodiments in the sense that the maximum **amount** a trader can lose is the amount invested. In this respect, the limited liability feature is similar to that of a long option position in... have a portfolio of counterparties as described above. As a consequence, there should be a statistical diversification of the credit risk - 38 such that the **amount** of credit risk borne by any one trader is, on average (and in all but exceptionally rare cases), less than if there were an exposure... DBAR contingent claims until the fulfillment of the termination criteria. Interest is typically charged on outstanding margin loans while such loans are outstanding. For some **contingent** claims, trade balance interest can be imputed into the closing returns of a trading period. (c) Suspense Accounts: These accounts relate specifically to investments which... beginning of a trading period and to ascertain observable events during the observation period. Sophisticated simulation methods may be required for some groups of DBAR **contingent** claims in order to estimate expected returns, at least at the start of a trading period. (h) Real-Time Risk Management Server: In order to compute trader margin... expectations, then DBAR contingent claim returns will, on average, reflect trader expectations, and these expectations - 42 will themselves be realized on average. In preferred embodiments, **efficiency measurements** are made on defined states and investments over the entire distribution of possible outcomes, which

can then be used for statistical time series analysis with...invention can be represented in a manner consistent with the conventional markets, i.e., in terms of bid/offer spreads. - 151.2 Construction of Digital Options Using DBAR Methods and Systems The methods of multistate trading of DBAR contingent claims previously disclosed can be used to implement investment in a group....some desired purpose. For example, it is not uncommon for traders of LE13 OR based interest rate futures on the Chicago Mercantile Exchange ("CME") to execute simultaneously a group of futures with different expiration dates covering a number of years. Such a group, which is commonly termed a "strip," is typically traded to hedge another position...back office software that can readily handle the processing of digital options. For example, Sungard, Inc., produces a variety of mature software systems for the processing of derivatives securities, including digital options. Furthermore, in-house derivatives systems currently in use at major banks have basic digital options capability. Since digital options are commonly encountered instruments, many of...and put options, digital spreads, and digital strips with limit "prices" attached. The limit - 161 price" indicates that a trader desires that his trade be executed at that indicated limit "price" - actually the implied probability that the option will expire in the money -- "or better." In the case of a purchase of a digital option, "better" means at the indicated limit "price" implied....digital options: (1) At least some buy ("sell") orders with a limit "price" greater (less) than or equal to the equilibrium "price" for the given option, spread or strip are executed or "filled." (2) No buy ("sell") orders with limit "prices" less (greater) than the equilibrium price for the given option, spread or strip are executed. (3) The total amount of executed lots equals the total amount invested across the distribution of defined states. (4) The ratio of payouts should each constituent state of a given option....occur as is specified by the trader, (including equal payouts in the case of digital options), within a tolerable degree of deviation. (5) Conversion of filled limit orders to market orders for the respective filled quantities and recalculating the equilibrium does not materially change the equilibrium. (6) Adding one or more lots to any of the filled limit orders converted to...than have been filled other than the just filled 80 digital put, there is no removal or "prune" step required at this stage in the process. (viii) According to step 6.8(8), the next step is to identify another order which 15 has a limit "price" higher than the... executed or "filled": Table 6 Filled Buy Orders 30 calls 50 calls 80 calls Limit Price Quantity Ejkd Limit Price Quantity Ejkd Limit Price Quantity Filled 0.82 10000 0 0.43 10000 0 0.1 10000 0.835 10000 10000 0.47 10000 0 0.14 10000 81040....one investor and not all of them can be filled or executed at a given equilibrium, in preferred embodiments it is necessary to decide how many of which investor's orders can be filled, and how many of which 10 investor's orders will remain unfilled at that equilibrium. This may be accomplished in several ways, including by filling orders on....execution of limit orders) chances the implied probability or "price" of each of the states in the group. As the limit "price" is increased, the quantities specified in a buy order are more likely to be filled, and a curve can be drawn with the associated limit "price"/quantity pairs. The curve represents the amount that could be filled (for example, along...sell" digital option orders in terms of notional payout, or notional payout less the premium received). In this embodiment, the DBAR DOE can accept and process limit orders for digital options expressed in terms of each trader's desired payout. In this embodiment, both buy and sell orders may be handled consistently, and the speed of...vector of equilibrium prices, p, by the solution of the eigensystem of Equation 7.7. Demand-based markets or auctions may be implemented with a standard limit order book in which traders attach price conditions for execution of buy and sell orders. As in any other market, limit orders allow traders to control the price at which their orders are executed, at....auctions. The mathematical expression of a General Limit Order Book is an optimization problem in which the market clearing solution to the problem maximizes the volume of executed orders subject to two constraints for each order in the book. According to the first constraint, should an order be executed, the order's limit price is greater than or equal to the market price including the executed order. According to the second constraint, the order's executed notional amount is not to exceed the notional amount requested by the trader to be executed. 7.1 Special Notation For the purposes of the discussion of...

Dialog eLink: Order File History

16/3K/4 (Item 4 from file: 349)

DIALOG(R)File 349: PCT FULLTEXT

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00994559

## DIGITAL OPTIONS HAVING DEMAND-BASED, ADJUSTABLE RETURNS, AND TRADING EXCHANGE THEREFOR

OPTIONS NUMERIQUES A RETOURS AJUSTABLES BASEES SUR LA DEMANDE ET BOURSE D'ECHANGES COMMERCIAUX AFFERENTE

**Patent Applicant/Patent Assignee:**

- **LONGITUDE INC**  
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**Inventor(s):**

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**Legal Representative:**

- **WEISS Charles A(et al)(agent)**  
Kenyon & Kenyon, One Broadway, New York, NY 10004; US

	Country	Number	Kind	Date
Patent	WO	200323575	A2-A3	20030320
Application	WO	2002US30309		20020909
Priorities	US	2001950498		20010910

**Designated States:** (Protection type is "Patent" unless otherwise stated - for applications prior to 2004)

AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG,  
BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ,  
DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD,  
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP,  
KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT,  
LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ,  
NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE,  
SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,  
UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

[EP] AT; BE; BG; CH; CY; CZ; DE; DK; EE; ES;  
FI; FR; GB; GR; IE; IT; LU; MC; NL; PT;  
SE; SK; TR;

[OA] BF; BJ; CF; CG; CI; CM; GA; GN; GQ; GW;  
ML; MR; NE; SN; TD; TG;

[AP] GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ;  
UG; ZM; ZW;

[EA] AM; AZ; BY; KG; KZ; MD; RU; TJ; TM;

**Language** Publication Language: English

Filing Language: English

Fulltext word count: 122079

**Claims:**

...Limit Order Book Optimization

7.8 Transaction Fees7.9 An Embodiment of the Algorithm to Solve the Limit Order BookOptimization7.10 Limit Order Book Display7.11 Unique Price Equilibrium Proof8 Network Implementation9 Structured Instrument Trading9.1 Overview:

Customer Oriented DBAR-enabled Products<sup>9,2...</sup> of a trading period and to ascertain observable events during the observation period. - 43 Sophisticated simulation methods may be required for some groups of DBAR **contingent** claims in order to estimate expected returns, at least at the start of a trading period.<sup>(h)</sup> Real-Time Risk Management Server: In order to compute trader margin... rational expectations, then DBAR contingent claim returns will, on average, reflect trader expectations, and these expectations will themselves be realized on average. In preferred embodiments, **efficiency measurements** are made on defined states and investments over the entire distribution of possible outcomes, which can then be used for statistical time series analysis with... A normal distribution is used for illustrative purposes, and other types of distributions (e.g., the Student T distribution) can be used to compute the **number** of standard deviations corresponding to the any percentile of interest. As discussed above, the maximum amount that can be lost in preferred embodiments of canonical... further accordance with Step (1) above, the amount invested in each state in the respective group of contingent claims, is multiplied by the previously calculated **standard** deviation of state returns per investment,  $\epsilon_{ji}$ , so that the **standard** deviation of returns per state in dollars for each claim equals, for the IBM group: (2, 2.4495, 4) and, for the GM group, (0)... such scenarios are generated so that a resulting distribution of profit and loss is obtained. The resulting profits and losses can be arranged into ascending **order** so that, for example, percentiles corresponding to any given profit and loss number can be computed. A bottom fifth percentile, for example, would correspond to... Contingent Claims Using the VAR-based Methodology Step (i) of the VAR-based CCAR methodology involves obtaining, for each trader in a group of DBAR **contingent** claims, the amount of margin used to make each **trade** or the amount of potential loss exposure from trades with profit and loss scenarios comparable to sales of options in conventional markets. Step (11) involves... in Step (iii) of this CCAR methodology are weighted according to the correlation between each possible pair of states (matrix  $C_{ij}$ , as described above). The **resulting** number is a credit-adjusted **standard** deviation of returns in units of the invested amounts for each trader for each investment on the portfolio of groups of DBAR contingent claims. For... with the entry at row  $i$  and column  $j$  containing the statistical correlation of changes in credit ratings described above. The square root of the **resulting** matrix multiplication is an approximation of the **standard** deviation of losses, due to default, for all the traders in a group of DBAR contingent claims. This value can be scaled by a number... vector of equilibrium prices,  $p$ , by the solution of the eigensystem of Equation 7.7. Demand-based markets or auctions may be implemented with a **standard limit order book** in which traders attach price conditions for **execution** of buy and sell orders. As in any other market, **limit orders** allow traders to control the price at which their orders are executed, at the risk that the orders may not be executed in full or in part. **Limit orders** may be an important execution control feature in demand-based auctions or markets because final execution is delayed until the end of the trading or auction period. Demand-based markets or auctions may incorporate standard **limit orders** and **limit order** book principles. In fact, the **limit order** book employed in a demand-based market or auction and the mathematical expressions used therein may be compatible with standard **limit order** book mechanisms for other existing markets and auctions. The - 185 mathematical expression of a General **Limit Order Book** is an optimization problem in which the market clearing solution to the problem maximizes the **volume** of **executed orders** subject to two constraints for each order in the book. According to the first constraint, ... executed, the order's limit price is greater than or equal to the market price including the executed order. According to the second constraint, the order's **executed** notional amount is not to exceed the notional amount requested by the trader to be executed. 7.1 Special Notation For the purposes of the discussion of... is a natural number so  $r_j$  is positive for all  $j$ ,  $j = 1, 2, \dots, n$ ;  $W$ :  $n \times I$  vector where  $w_j$  equals the inputted **limit price** for order  $r_j$ ,  $j = 1, 2, n$ ; Range:  $0 < w_j < 1$  for  $j = 1, 2, \dots, n$  for digital options  $0 < w_j$  for  $j = 1, 2, \dots, n$  for arbitrary payout options- 186  $w_i$ :  $n \times 1$  vector where  $w_j$  is the adjusted **limit price** for **orders** after converting "sell" orders into buy orders (as discussed below) and after adjusting the inputted **limit**  $Z_j$  order  $w_j$  with fee  $f_j$  (assuming flat fee) for order  $j$ ,  $j = 1, 2, \dots, n$  for a "sell" order  $j$ , the adjusted limit price  $W_j$  equals (1... Section 7), traders submit orders during the DBAR market or auction that include the following data: (1) an order payout size (denoted  $r_j$ ), (2) a **limit order** price (denoted

**Dialog eLink: Order File History**

19/3K/6 (Item 3 from file: 349)

DIALOG(R)File 349: PCT FULLTEXT

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00816850

**A SYSTEM AND METHOD FOR PURCHASING AND MANAGING SECURITIES EXPRESSED IN DOLLAR DENOMINATIONS**

SYSTEME ET PROCEDE D'ACQUISITION ET DE GESTION DE TITRES EXPRIMES EN DOLLARS

**Patent Applicant/Patent Assignee:**

- **CANOPY ACQUISITION CORP**  
4500 Bohannon Drive, Menlo Park, CA 94025; US; US(Residence); US(Nationality)

**Inventor(s):**

- **CARTER Kevin T**  
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**Legal Representative:**

- **WALLACH Steven I(et al)(agent)**  
Pennie & Edmonds LLP, 1155 Avenue of the Americas, New York, NY 10036; US

	Country	Number	Kind	Date
Patent	WO	200150390	A1	20010712
Application	WO	2000US35670		20001229
Priorities	US	99476668		19991230

**Designated States:** (Protection type is "Patent" unless otherwise stated - for applications prior to 2004)

AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG,  
BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE,  
DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH,  
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG,  
KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,  
MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ,  
PL, PT, RO, RU, SD, SE, SG, SI, SK, SL,  
TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU,  
ZA, ZW

[EP] AT; BE; CH; CY; DE; DK; ES; FI; FR; GB;  
GR; IE; IT; LU; MC; NL; PT; SE; TR;

[OA] BF; BJ; CF; CG; CI; CM; GA; GN; GW; ML;  
MR; NE; SN; TD; TG;

[AP] GH; GM; KE; LS; MW; MZ; SD; SL; SZ; TZ;  
UG; ZW;

[EA] AM; AZ; BY; KG; KZ; MD; RU; TJ; TM;

**Language** Publication Language: English

Filing Language: English

Fulltext word count: 9238

**Detailed Description:**

...of MSFT to produce a net aggregated order to 1.5 purchase \$400 of MSFT. The remaining net aggregated order is converted and routed for **execution in the standard** method described herein. After **execution** of the net aggregated **order**, the **amount** held for internal **execution** is **executed** at the actual price of execution of the net aggregated order (or alternatively the closing price or some point in between) and then routed for...

23/3,K/1 (Item 1 from file: 20)  
DIALOG(R)File 20: Dialog Global Reporter  
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69450452 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
Event Brief of Q1 2009 TD Ameritrade Holding Corp. Earnings Conference Call - Part 1

FAIR DISCLOSURE WIRE  
January 20, 2009

**Journal Code:** WFDW **Language:** English **Record Type:** FULLTEXT  
**Word Count:** 4467

-  
...rates, down from \$13.27 to \$12.76, primarily due to: 1. More free trades as new account growth soared this last qtr. 2. Lower **options** trading **volume** as a **percentage** of total trades. 4. Asset-based revenues, down \$56m primarily due to: 1. Current rate environment. 2. Lower margin debt levels. 5. Expenses, up \$25m...

...Oct. 23, Fed lowered rates another 150 BP. 1. Recasting 2008 using new rate environment in effect today, \$1.21 drops to \$1.05 per **share**. 2. These **rate** changes and mix of interest earning assets has now eliminated \$0.28 from 2008. 3. All of this change assumes midpoint net interest margin of...generating further traction in asset gathering efforts to drive: 1. Client engagement. 2. Sales. 3. New assets flowing into firm. 3. Will work to maintain **Number** 1 market **share** in TPD. 4. Will continue to build cash to provide Co. with flexibility. 5. Recently announced an agreement to acquire thinkorswim, which: 1. Advances Co...

23/3,K/2 (Item 2 from file: 20)  
DIALOG(R)File 20: Dialog Global Reporter  
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58719759  
**Dark Pools, Reg NMS and the Changing Liquidity Landscape**

Joseph Wald and Kyle Zasky  
SECURITIES INDUSTRY NEWS  
September 17, 2007

**Journal Code:** TSIN **Language:** English **Record Type:** FULLTEXT  
**Word Count:** 2492

-  
...change already underway--the move to electronic markets. But it does contain similar provisions, such as a requirement to seek best execution and to display **limit orders** in the public markets, which are likely to have similar impacts to those stemming from Reg NMS. There are already signs that multilateral dark pools...

23/3,K/3 (Item 3 from file: 20)  
DIALOG(R)File 20: Dialog Global Reporter  
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56545530

#### Smart Gets Smarter

Nina Mehta  
TRADERS MAGAZINE  
May 01, 2007

**Journal Code:** TTMM **Language:** English **Record Type:** FULLTEXT  
**Word Count:** 3068

-  
...Every trading venue supports ISOs. To take charge of their own order flow, most large brokers are instituting a wholesale shift from current market and **limit orders** to ISO and IOC orders. Most brokers have already begun using these order types to see how they work and to test execution quality across...

...bid and offer. Some two dozen brokers already have algorithms that go to dark pools and use dark order types on public markets to stealthily **execute orders**. An increasing **number** of firms enable all or most of their algos to access dark liquidity, whether it's resting in dark pools and ATSS or in hidden...

23/3,K/4 (Item 4 from file: 20)  
DIALOG(R)File 20: Dialog Global Reporter  
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46515885

#### Algorithmic Trading Systems and Solutions - Q & A

Editorial Staff  
TRADERS MAGAZINE  
January 10, 2006

**Journal Code:** TTMM **Language:** English **Record Type:** FULLTEXT  
**Word Count:** 3213

-  
...potential risk of reverse engineering. Andrew F. Silverman, Goldman Sachs: We are certain that reverse-engineering occurs in the marketplace. Goldman Sachs continuously monitors its **execution** quality against a **number** of quantitative **benchmarks**. In **order** to remain competitive, our algorithms are frequently refined to enhance our execution quality through improved order placement and randomization. Because the marketplace is a zero...

02678066 449940051

**On- or off-market trading? Evidence on competition, liquidity and execution costs**

Skjeltorp, Johannes A; Naes, Randi  
Canadian Investment Review v16n3 pp: 47-51  
Fall 2003  
ISSN: 0840-6863 **Journal Code: CNIR**

**Abstract:**

...measures for the S&P500 index over the same dates as well as for the entire period when the Fund was trading. We simulate three **limit order** strategies on the same stocks and on the same dates when they were tried crossed by the Fund. In the first **limit order** simulation (LO1) we do not take into account the actual order sizes traded by the Fund. In other words, we assume that only one share is traded in each stock.<sup>4</sup> At the beginning of each crossing date a **limit order** is submitted with a limit price equal to the opening bid-quote ("at the quote" **limit order** strategy) for each stock that the Fund tried to cross. If a trade with a price lower than the **limit order** price is observed during the day, the order is assumed to be filled. If an order is not filled, we assume that it is executed at the opening price the next day. Because we are ignoring order size, the first **limit order** simulation constitutes a lower bound on transaction costs. In the second simulation (LO2) we split the actual **order** size into suborders. The **number** and size of the suborders are determined by the average order size traded in the stock the day before the Fund traded. All the suborders...

...if the observed execution price is less than the limit price. When a suborder is filled, the next suborder is submitted at the bid quote **following** the fill ("chasing the market"). **Unfilled orders** are assumed to be executed at the opening price the next day. The third **limit order** simulation (LO3) is similar to the LO2 strategy except that we also take the size of the suborder into account. A suborder is only assumed...

...the limit price and the size is equal to or larger than the size of our order. This is the most realistic of our simulated **limit order** strategies. In addition to the three **limit order** strategies, we simulate a pure crossing strategy where we assume that the Fund only traded in the crossing network. Orders that the Fund could not...

...the closing prices in equal amounts over the 10 days after the first crossing attempt failed. Neither the pure crossing strategy nor the two first **limit order** strategies (LO1 and LO2) have significantly different execution costs from the opportunistic crossing strategy. Thus, not even the most simplistic and unrealistic **limit order** simulation (LO1), which constitutes our "lower bound" on primary market execution costs, is able to significantly beat the actual crossing strategy. The most realistic **limit order** strategy (LO3) is shown to be significantly more expensive. In addition, we have not taken into account that the explicit costs in crossing networks are...



...costs would overwhelmingly favour the opportunistic crossing strategy, or potentially the pure crossing strategy. Some studies indicate that market orders are cost-effective alternatives to **limit orders** because market orders (worked orders) often achieve significant price improvements. However, it is hard to model price improvements and price impacts, and we have therefore...

23/3,K/6 (Item 2 from file: 15)  
DIALOG(R)File 15: ABI/Inform(R)  
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02324591 86067896  
**Supply chain dynamics and optimization**

de Souza, Robert; Zice, Song; Chaoyang, Liu  
Integrated Manufacturing Systems v11n5 pp: 348-364  
2000  
ISSN: 0957-6061 Journal Code: ING  
Word Count: 8400

**Text:**

...orders will cause it to win or lose the competitive battle."

Customer service is often discussed in terms of the metrics which are used to **measure** it. Typical **measures** of customer service are a company's **ability** to **fill orders** within due date ( **fill rate**), or its ability to deliver products to customers within the time quoted (on time deliveries). Other metrics should be used, for example, to evaluate the...

23/3,K/7 (Item 1 from file: 9)  
DIALOG(R)File 9: Business & Industry(R)  
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04028202 Supplier Number: 149166079 (USE FORMAT 7 OR 9 FOR FULLTEXT)  
Disclosure of information on order execution practices of market centers: How can investors utilize it?  
( United States. Securities and Exchange Commission )

Financial Services Review , v 13 , n 2 , p 151  
June 2004

**Document Type:** Journal  
**Language:** English **Record Type:** Fulltext  
**Word Count:** 6521 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**TEXT:**

...can represents the **number** of **shares** canceled before **execution**.

All market centers use five speed categories to **measure** **execution** time as mandated by Rule 11Ac1-5:0 to 9 seconds; 10 to 29

seconds; 30 to 59 seconds; 60 to 299 seconds; and 5...

23/3,K/8 (Item 1 from file: 16)  
DIALOG(R)File 16: Gale Group PROMT(R)  
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07367764 **Supplier Number:** 59450900 (USE FORMAT 7 FOR FULLTEXT)

**at deadline.(Brief Article)**  
Traders, v 11, n 136, p 6  
April, 1998  
**Language:** English **Record Type:** Fulltext  
**Article Type:** Brief Article  
**Document Type:** Magazine/Journal ; Trade  
**Word Count:** 642

...academia.

"Liquidity premium is a very intuitive measure of trade execution," said Charles M.C. Lee, an accountant and finance professor at Cornell University. "This **measure** provides another dimension by which to analyze and **measure** trade **execution** quality."

TAG's audits evaluate trade **execution** against a **number** of **measures**, including price improvement, **order fill**, liquidity and timeliness. TAG has established an industry advisory board dedicated to fostering a dialogue on issues that affect best execution.

23/3,K/9 (Item 1 from file: 267)  
DIALOG(R)File 267: Finance & Banking Newsletters  
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04604058

**On Equal Footing: Nasdaq wants to rank ECN orders on par with market-makers**

Isabelle Clary  
Security Industry News  
September 22,2003 **Document Type:** NEWSLETTER  
**Publisher:** SECURITIES DATA PUBLISHING  
**Language:** ENGLISH **Word Count:** 1119 **Record Type:** FULLTEXT

(c) SECURITIES DATA PUBLISHING All Rts. Reserv.

**Text:**

...Brut's decision to print its internalized trades on the Cincinnati Stock Exchange (CSE).

"The most important metric that we will use to judge our **transaction** business is the **percentage** of Nasdaq trades that occurs within our system," Nasdaq President and CEO Robert Greifeld told analysts last month, when detailing the company's second-quarter results.

Trade volume matters most to Nasdaq because market data revenues are allocated according to the **number** of trades-not **shares** -handled by an exchange. It also is the criteria determining the primary market in a fragmented marketplace, and, in turn, is crucial to attract or

...

...strategy could yield a huge bonanza if it manages to woo Instinet, the single-largest market participant that already charges just 0.3 cent a **share** for its high-**volume** clients.

"This would benefit any SuperMontage participant that charges 0.3 cent [per share] or less, and market-makers who want to reach ECNs and...

...attracted by financial incentives. However, Instinet's ATS and Island are merging into one mega-ECN that would control about 27 percent of overall Nasdaq **share volume**.

"It's a long overdue step by Nasdaq to correct a market inefficiency created by SuperMontage. If fees are capped, rationality returns to the marketplace...

...customers' business strategy, while ignoring other situations that do not fit into its plans. Due to a billing dispute with some market participants, some of **Track's** quotes are auto-decremented and **orders** remain **unfilled**.

"We would not have a problem with Nasdaq capping fees, if they would encourage all of their members to pay the fees," Covlin said of...

...fee cap, because Track charges only \$2.90 per mil. I have a problem on a moral ground."

Nasdaq created SuperMontage, a transaction platform-cum-**limit order** book, as part of its plan to become a full-fledged exchange, independent from its NASD parent. Once independent, Nasdaq planned to take SuperMontage with...

23/3.K/10 (Item 2 from file: 267)  
DIALOG(R)File 267: Finance & Banking Newsletters  
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04571314

#### Market Makers vs. ECNs

Michael T. Dorsey  
Traders

October 1,2000 **Document Type:** NEWSLETTER

**Publisher:** SECURITIES DATA PUBLISHING

**Language:** ENGLISH    **Word Count:** 685    **Record Type:** FULLTEXT

(c) SECURITIES DATA PUBLISHING All Rts. Reserv.

#### Text:

...Trading Group believe that reports of our imminent demise (as well as the downfalls of our fellow OTC market makers) are greatly exaggerated.

ECNs display **limit orders** and match those **limit orders** with others existing in their systems. ECNs' main virtue is that they are brokers that never take the other side of a customer **limit order**. ECNs also provide anonymity and a high degree of control for their subscribers.

ECNs remove themselves from trades by procuring executions rather than giving them...

...ECN may not be the best execution destination. A liquidity provider like a Nasdaq wholesaler may be the better execution venue, as it handles both **limit** and market **orders**.

By supplying liquidity, wholesalers attract orders that demand immediate liquidity. These orders are matched against **limit orders** held by dealers when the price of those **limit orders** either equals or improves the inside market. In this way, dealers operate like ECNs. For dealers that display **limit orders** immediately, the ECN business model differs only to the extent that ECN **limit order** files are displayed only to their subscribers. This, however, may be changing.

Certain ECNs now also handle market orders. But without supplying capital, ECNs tend to procure only **partial** executions for such **orders**, thus leaving their subscribers only **partially** satisfied. On the other hand, dealers commit capital to provide a complete fill, often exceeding the size of the inside market. An ability to provide enhanced liquidity attracts market orders to Knight. These orders, in turn, make us an attractive **limit order execution** destination.

Many are also promoting a soft CLOB, or a central **limit order** book, through a SEC mandate of price-time priority across the marketplace, as a way to expand the ECN business model. Essentially, a soft CLOB would force dealers like Knight to route their market and marketable **limit orders** to the market participant first displaying the best bid or ask price.

Currently, dealers execute orders by matching the best bid or offer, taking a market or marketable **limit order** into inventory, and/or interacting with other market participants as they see fit in the process of managing their resulting inventory positions. ECNs argue that the first **limit order** driving the inside market should be rewarded for narrowing the spread.

But should such **limit orders** be rewarded at the possible expense of the market or marketable **limit orders** that may find themselves in a queue for execution? By rewarding first-in-time **limit orders** would not market and marketable **limit orders** lose some of the immediacy they demand? And, do we want the federal government making that kind of value judgment?

This is all critically important when one considers the main elements of best **execution for limit orders** - fulfillment rates **measuring** certainty or probability of fills, and rapidity **measuring** the quickness of those fills. With the most active and volatile stocks, material differences may not exist...

30/3.K/2 (Item 2 from file: 15)  
DIALOG(R)File 15: ABI/Inform(R)  
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01382880      00-33867  
**A revolution in securities markets' structures?**

Anonymous  
Financial Market Trends (France) n65 pp: 15-37  
Nov 1996

ISSN: 0378-651X Journal Code: FMT

Word Count: 8224

**Text:**

...and the amount of price and quote data the system releases.

A wide spectrum of order types may be allowed on a trading system, including: "**limit orders**", which have a price and **volume** attached, but need not be **executed** immediately; "**market orders**", which have a **volume** but no price attached, and which must be executed immediately; "day" orders, which are good till the end of the trading day; "good-till-cancelled" orders; "all or none" **orders**, for which **partial** executions are not allowed; "minimum fill" orders, which require the execution of a pre-specified minimum volume; and "market on opening/closing" orders, which are...

30/3,K/3 (Item 1 from file: 148)

DIALOG(R)File 148: Gale Group Trade & Industry DB

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0019906183 **Supplier Number:** 72327245 (USE FORMAT 7 OR 9 FOR FULL TEXT)

**Web wars.(online share dealing)**

Osborne, Hilary

What Investment , 18

March , 2001

ISSN: 0263-953X

**Language:** English

**Record Type:** Fulltext

**Word Count:** 2900 **Line Count:** 00253

...is straightforward and well explained and an interactive trading demo shows you exactly what to expect.

When making trades through DLJ Direct, you can use **limit orders** or opt to **trade at** a fixed price. You **fill** in how **many shares** you wish to purchase and how you wish to purchase them. The next screen shows the estimated price of the trade, including the stamp duty...

30/3,K/4 (Item 2 from file: 148)

DIALOG(R)File 148: Gale Group Trade & Industry DB

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08478544 **Supplier Number:** 17844129 (USE FORMAT 7 OR 9 FOR FULL TEXT)

**An empirical analysis of the limit order book and the order flow in the Paris Bourse.**

Biais, Bruno; Hillion, Pierre; Spatt, Chester

Journal of Finance , v50 , n5 , p1655(35)

Dec , 1995

ISSN: 0022-1082

**Language:** English

**Record Type:** Fulltext; Abstract

**Text:**

Many of the world's major stock exchanges, such as the New York and Tokyo Stock Exchanges, rely at least **partially** upon limit **orders** for the provision of liquidity. Therefore, it is important to understand the placement of limit orders and their contribution to liquidity and price formation. There...

...the sequence that they are received by the market. Transactions occur when a trader on the opposite side of the market hits the quote. The **limit orders** for a specified **quantity** and price are stored and **executed** using time priority at a given price and price priority across prices. Computerization ensures that priority rules are enforced.(10) The status of the security...handled to differentiate them from limit orders. However, there are two situations where this identification rule need not be accurate. Market orders that are fully **executed** cannot be distinguished from **limit orders** for a smaller **quantity** than that available at the **quotes**, so we pool these two categories together as "small orders." Second, limit **orders** that are immediately but **partially** executed at the best bid or ask quote cannot be distinguished from market orders, so we classify them as market orders. Note that this misidentification is not of consequence because...is hit per stock is 18.27. Thus, since the average daily number of trades is 148.6, approximately one trade out of eight is **partially** executed against a hidden **order**. We also compute the average number of shares executed against the hidden part of the orders, when a hidden order is hit. It is equal...

...orders become disclosed and become visible offers and demands as they get hit. The average number of shares appearing in the book when a hidden **order** is hit and gets **partially** disclosed is equal to 717.18.

II. The Order Book

Theoretical research in market microstructure has extensively studied the price schedule, mapping trades into execution...FF 0.1, the median is 9 ticks. Consequently, the bid-ask spread is larger than the minimum tick size and the discreteness in the **bid-ask** spread is, at least **partly**, endogenous. This is consistent with the adverse information theories of the bid-ask spread developed by Rock (1990), Glosten (1994), and Bernhardt and Hughson (1993b...

...smaller.(24)

These findings suggest that, for stocks with a small tick size (0.1 FF), the discreteness in the book away from the best **quotes** is, at least **partly**, endogenous. Such "holes" in the **order** book could reflect the strategic bidding behavior of traders exploiting the discreteness of the pricing grid. Bernhardt and Hughson (1993a) analyze this issue in the...large.

V. Comparison of the Paris Bourse with Other Limit Order Markets

The Paris Bourse, the NYSE, and the Tokyo Stock Exchange rely (at least **partially**) on limit **orders** for the supply of liquidity. Our analysis of the Paris Bourse provides some insights about the supply of liquidity in limit order markets consistent with...

37/3,K/1 (Item 1 from file: 20)  
DIALOG(R)File 20: Dialog Global Reporter  
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46515826

#### **Dash-5 Stats Headed for Extinction?**

Peter Chapman  
TRADERS MAGAZINE  
January 10, 2006

**Journal Code:** TMM **Language:** English **Record Type:** FULLTEXT  
**Word Count:** 1401

...best execution," Matt Lavicka, a senior trading official at Goldman Sachs, said at an industry gathering earlier this year. The dash-5 stats include such **metrics** as **effective** spread', which compares the **execution** price to the market's best quote at the time of the **fill**; speed; and **amount** of price improvement an **order** received. Indeed, the numbers provided by the trading venues may not even be accurate. The NASD recently fined Instinet and its INET ECN division \$700...

...5 methodology has two major defects. First, it doesn't take into account the complete array of order types. It includes only market and marketable **limit orders**. "You're not monitoring stop orders," Brown says. "You're not monitoring stop-**limit orders**. You're not monitoring good-till-cancel orders. You're not monitoring orders over 10,000 shares. You're excluding half of your order flow...

37/3,K/2 (Item 1 from file: 148)  
DIALOG(R)File 148: Gale Group Trade & Industry DB  
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0019893747 **Supplier Number:** 69493520 (USE FORMAT 7 OR 9 FOR FULL TEXT)  
**Q & A Order Execution.**

Compliance Reporter, 8, 2, 10  
Jan 15, 2001  
ISSN: 1529-5669

**Language:** English

**Record Type:** Fulltext

**Word Count:** 628 **Line Count:** 00054

...spreads) on a stock-by-stock basis every month. Rule 11aC1-5 is not an anti-fraud rule and does not alter the existing legal **standards** that apply to a B/D's duty of best **execution** but rather seeks to improve execution of individual investor orders by spurring competition between market centers through investor awareness of each market center's **order execution** statistics.

The large **volume** of data disclosed by market centers in accordance with Rule 11aC1-5 makes it likely that individual investors will rely on professionals to interpret the...

37/3,K/3 (Item 1 from file: 268)  
DIALOG(R)File 268: Banking Info Source  
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00452702 348973261 (USE FORMAT 7 OR 9 FOR FULLTEXT)

**Investment advisers and best execution: Defining the duty, measurement, and best practices**

Anderson, James E; Ahn, Cathy H

Banking & Financial Services Policy Report , v 22 , n 5 , p 1 , May 2003 **Document Type:** Periodical; **Feature Language:**

English **Record Type:** Fulltext

**Word Count:** 4,221

**ARTICLE REFERENCE NUMBER:**

...orders (which generally exclude so-called "special handling" orders such as closing price orders). Among other things, the report must show, for market and marketable **limit orders** covered by the Rule, (1) the average effective spread for execution of covered orders, which is defined as "the share-weighted average of effective spreads...

...bid at the time of order receipt." This **measure** of price improvement serves as a single measure of the liquidity premium on market and marketable **limit orders**; and (2) for shares **executed** with price improvement, the cumulative **number** of **shares** of covered **orders executed** with price improvement, the share-weighted average period from the time of order receipt to the time of order execution, and the share-weighted average period from order receipt to **execution** for these shares. These price improvement **measures** are designed to help weigh liquidity enhancement and the trade-off between speed and price.

The Order Routing Rule complements the improved public disclosure of  
...

37/3,K/4 (Item 1 from file: 267)  
DIALOG(R)File 267: Finance & Banking Newsletters  
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04637458

**Smart Gets Smarter**

Nina Mehta

Traders

May 1,2007 **Document Type:** NEWSLETTER

**Publisher:** SOURCE MEDIA

**Language:** ENGLISH **Word Count:** 2743 **Record Type:** FULLTEXT

(c) SOURCE MEDIA All Rts. Reserv.

**Text:**

...way to get the executions the algorithm wants. Algorithms decide how to slice "parent" orders into the market to try to achieve a client's **execution benchmark**. Based on mathematical formulas, algos decide how quickly to **execute** the **order**, how **many** **shares** to **execute** at a time, how often and at what price. The algo's smart order router then decides how those "child" orders should be placed in...



...Every trading venue supports ISOs.

To take charge of their own order flow, most large brokers are instituting a wholesale shift from current market and **limit orders** to ISO and IOC orders. Most brokers have already begun using these order types to see how they work and to test execution quality across ...

#### IV. Text Search Results from Dialog

##### A. Abstract Databases

File 35:Dissertation Abs Online 1861-2010/Jul  
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File 474:New York Times Abs 1969-2010/Aug 18  
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File 347:JAPIO Dec 1976-2010/Apr(Updated 100726)  
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File 139:EconLit 1969-2010/Jun  
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Set	Items	Description
S1	3312	(LIMIT OR CONDITIONAL OR CONTINGENT OR STOPLIMIT) (2W) ORDER? ?
S2	60	(TRADE())AT? ? OR TRADE()THROUGH? ? OR PARTLY OR PARTIAL?? OR "NOT"()FILLED OR UNFILLED) (5N) (ORDER? ? OR TRANSACTION? ? OR BID? ? OR ASK? ? OR QUOTE? ? OR QUOTATION? ? OR RFQ? ? OR CONTRACT? ?)
S3	3	S2 (10N) (MONITOR? OR TRACK? OR DETECT? OR WATCH? OR FOLLOW? OR OBSERV? OR RECORD? OR REAL()TIME)
S4	134	(MEASUR? OR BENCHMARK? OR GAUGE? ? OR GAUGING OR YARDSTICK? OR REFERENCE()POINT? OR METRIC? ? OR STANDARD? ?) (10N) (PERFORMANCE OR EFFECTIVE? OR SUCCESS??? OR SUCCEED??? OR RESULT??? OR EFFICAC? OR RESULT OR RESULTS OR OPERATION?? OR EFFICIENCY OR EFFICIENT OR EFFECTIVENESS OR EFFECTUALITY OR EFFECTUALNESS OR EFFICACIOUSNESS OR RELIAB? OR EXECUTION OR ABILITY)
S5	380	(NUMBER OR AMOUNT OR MANY OR VOLUME OR COUNT? ? OR COUNTING OR QUANTITY OR QUANTITIES OR PERCENTAGE OR RATE) (5N) (ORDER? ? OR TRANSACTION? ? OR BID? ? OR ASK? ? OR QUOTE? ? OR QUOTATION? ? OR RFQ? ? OR CONTRACT? ? OR DERIVATIVE? ? OR FUTURE? ? OR OPTION? ? OR COMMODITY OR COMMODITIES OR INSTRUMENT? ? OR SHARE? ?)
S6	72	S5 (10N) (FILL??? OR FULFILLMENT OR ACKNOWLEDG? OR COMPLET? OR SATISFY? OR SATISFIE? ? OR EXECUT? OR PROCESS?)

S7 1 AU=(BUCKWALTER, A? OR BUCKWALTER A? OR BUCKWALTER (1N) (A OR ALAN)  
OR XENAKIS, J? OR XENAKIS J? OR XENAKIS (1N) (J OR JOHN) OR GOLOVINSKY, P? OR  
GOLOVINSKY P? OR GOLOVINSKY (1N) (P OR PAVEL))

S8 368 IC=(G06F OR G06Q)  
S9 60 S1 AND S2  
S10 2 S9 AND S4  
S11 0 S10 FROM 347,350  
S12 134 S1 AND S4  
S13 32 S12 FROM 347,350  
S14 15 S13 NOT AY>2002  
S15 0 S14 AND S8  
S16 368 S1 AND S8  
S17 127 S16 AND S2-S6  
S18 112 S17 FROM 347,350  
S19 47 S18 NOT AY>2002  
S20 21 S19 AND (S2 OR S3 OR S4 OR S6)  
S21 6 S20 AND (DERIVATIVE? ? OR FUTURE? ? OR OPTION? ? OR OTC OR  
OVER()COUNTER OR COMMODITY OR COMMODITIES OR INSTRUMENT? ? OR SECONDARY()MARKET?)  
S22 0 S21 NOT S20  
S23 15 S20 NOT S21  
S24 129 S10 OR S17  
S25 112 S24 FROM 347,350  
S26 17 S24 NOT S25  
S27 11 S26 NOT PY>2002  
S28 11 RD (unique items)  
S29 0 S4 (10N) S6  
S30 1 S7 AND S1

#### Dialog eLink: Order File History

21/5/1 (Item 1 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0015793489 Drawing available

WPI Acc no: 2006-349859/200636

Related WPI Acc No: 1999-561715; 2005-617239; 2006-076893; 2008-B13488

XRPX Acc No: N2006-296762

**Instrument orders processing method e.g. for security, involves converting final trading order into series of contingent orders for instrument specifying number of shares of instrument traded at schedule of prices**

Patent Assignee: FOLIOFN INC (FOLI-N)

Inventor: WALLMAN S M H

Patent Family ( 1 patents, 1 countries )

Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 7047218	B1	20060516	US 199838158	A	19980311	200636	B
			US 2000516792	A	20000301		

Priority Applications (no., kind, date): US 199838158 A 19980311; US 2000516792 A 20000301

#### Alerting Abstract US B1

NOVELTY - A value-based trading order for an **instrument** is combined with a share-based trading order to create a final trading order for **instrument**. A final trading order is converted into series of **contingent orders** for **instrument** specifying

**number of shares of instrument** traded at schedule of prices. The **number of shares of the instrument** is calculated in the schedule of prices according to specific equation.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

1. computer readable medium storing **instrument** order processing program; and
2. apparatus for executing trades in **instrument**.

USE - For processing orders related to trading of securities or other **instruments** such as government bonds, treasury-bills, shares in mutual funds, shares in investment trust, **derivatives**, investment contracts, bearer bonds, mutual funds, bank notes, insurance contracts, letters of credit.

ADVANTAGE - The inefficiencies in the trading of securities or other tradable **instruments** representing underlying assets and liabilities are removed, while adding more certainty to trader as to the **amount** of the **transaction** prior to **execution** or submission to the brokerage.

DESCRIPTION OF DRAWINGS - The figure shows the schematic outline of the **instrument** order processing system.

**Title Terms** /Index Terms/Additional Words: **INSTRUMENT**; ORDER; PROCESS; METHOD; SECURE; CONVERT; FINAL; TRADE; SERIES; SPECIFIED; NUMBER; SHARE; SCHEDULE; PRICE

**Dialog eLink:** [Order File History](#)

21/5/2 (Item 2 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0014291937 *Drawing available*

WPI Acc no: 2004-478633/200445

XRPX Acc No: N2004-377329

**Procurement and fulfillment process optimizing method, involves processing change request to pending customer order and sending confirmation message approving request if latest delivery date is met else sending capability response**

Patent Assignee: INT BUSINESS MACHINES CORP (IBM)

Inventor: ARGUST D D; MCAVOY B B

Patent Family ( 1 patents, 1 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20040111336	A1	20040610	US 2002316685	A	20021210	200445	B

Priority Applications (no., kind, date): US 2002316685 A 20021210

**Alerting Abstract** US A1

NOVELTY - The method involves receiving a change request to a pending customer order. The request has a latest acceptable delivery data and one of a requested delivery date, a quantity of an item, and a desired quantity of a new item that are not present in the pending order. The request is processed. A confirmation message approving the request is transmitted if the latest delivery date is met else a capability response is transmitted.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

- A. a storage medium encoded with machine-readable computer program code for optimizing procurement and fulfillment processes over a computer network
- B. a system for optimizing procurement and fulfillment processes over a computer network.

USE - Used for optimizing procurement and fulfillment processes of pending customer orders over a computer network (claimed) e.g. local area network (LAN) and wide area network (WAN).

**ADVANTAGE** - The method provides flexibility in negotiating changes and proposed changes to existing customer orders, thereby reducing complexity and cost associated with maintaining supply for orders until a customer decides which **option** is preferred and ensuring customer satisfaction. The **method** handles changing requirements to purchase orders by a customer base.

**DESCRIPTION OF DRAWINGS** - The drawing shows a flowchart illustrating a process of implementing a conditional change request via a **conditional order** alteration tool.

**Title Terms** /Index Terms/Additional Words: PROCESS; OPTIMUM; METHOD; CHANGE; REQUEST; PENDING; CUSTOMER; ORDER; SEND; CONFIRM; MESSAGE; APPROVE; LATE; DELIVER; DATE; CAPABLE; RESPOND

**Dialog eLink:** [Order File History](#)

21/5/3 (Item 3 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0013576679 *Drawing available*

WPI Acc no: 2003-671213/200363

XRPX Acc No: N2003-535992

**Online financial instrument trading system for business applications, matches trading criteria received from investor with advisor's criteria received from advisory service provider, based on which trading order is executed**

Patent Assignee: BENNETT N W (BENN-I); KALT D S (KALT-I)

Inventor: BENNETT N W; KALT D S

Patent Family ( 1 patents, 1 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20030144944	A1	20030731	US 200262590	A	20020131	200363	B

Priority Applications (no., kind, date): US 200262590 A 20020131

**Alerting Abstract** US A1

**NOVELTY** - An advisory service provider (20) transmits information containing advisor's criteria (25) for trading financial securities to an individual investor (10). A processor receives selected trading criteria (15) from the investor and matches it with the criteria provided by service provider. Based on the matching result, trading order (35) is executed for purchase/sale of financial securities.

**DESCRIPTION** - An **INDEPENDENT CLAIM** is also included for an improved method to facilitate managed trading of collectible financial **instruments**.

**USE** - For online trading of financial **instruments** such as stocks, bonds, stock **options**, bond **options**, **commodities futures**, **commodities future options**, index **futures**, index **futures options**, mutual funds, currencies and metals for business applications.

**ADVANTAGE** - Allows individual investors to readily access and survey various trading recommendations offered by one or more financial advisory service providers, hence trading is performed accurately and efficiently according to the trading conditions.

**DESCRIPTION OF DRAWINGS** - The figure shows a block diagram of the investment system.

10 individual investor

15 investor's criteria

20 advisory service provider

25 advisor's criteria

30 system operator

35 trading order

**Title Terms** /Index Terms/Additional Words: FINANCIAL; **INSTRUMENT**; TRADE; SYSTEM; BUSINESS; APPLY; MATCH; CRITERIA; RECEIVE; ADVICE; SERVICE; BASED; ORDER; EXECUTE

**Dialog eLink:** [Order File History](#)

21/5/4 (Item 4 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0013414114 *Drawing available*

WPI Acc no: 2003-504498/200347

XRPX Acc No: N2003-400638

**Online sales and profit or discount sharing method for tangible good, travel, involves determining percentage of discount to each customer according to sequence of order, after confirming valid order**

Patent Assignee: FAN K C (FANK-I); FANG K (FANG-I)

Inventor: FANG K; FANG K C

Patent Family ( 3 patents, 2 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20030101101	A1	20030529	US 200243121	A	20020114	200347	B
JP 2003173411	A	20030620	JP 20029924	A	20020118	200350	E
US 6847936	B2	20050125	US 200243121	A	20020114	200508	E

Priority Applications (no., kind, date): TW 2001129389 A 20011128; US 200243121 A 20020114

**Alerting Abstract** US A1

NOVELTY - The sales plan in the form of digital promotional literature, is advertised on the website. The valid orders of customers are arranged and the codes are assigned to each customer according to order sequence and identity of the customers. The percentage of discount to each customer is determined according to codes of customer, after confirming the valid orders and notifying the next sales plan.

USE - For sharing online sales and profit of discount of products such as tangible goods, valuable goods, services such as travel, courses, concerts, in e-commerce business, through web site.

ADVANTAGE - Since profit or discount sharing is based on sequence of order, the customer enjoys low price and extra bonus and since the orders are arranged in sequence, the orders are completed within short period, thereby ensuring the interest of the customers and quality of the goods.

DESCRIPTION OF DRAWINGS - The figure shows a flowchart explaining online sales and profit or discount sharing process.

**Title Terms** /Index Terms/Additional Words: SALE; PROFIT; DISCOUNT; SHARE; METHOD; TANGIBILITY; TRAVEL; DETERMINE; PERCENTAGE; CUSTOMER; ACCORD; SEQUENCE; ORDER; AFTER; CONFIRM; VALID

**Dialog eLink:** [Order File History](#)

21/5/5 (Item 5 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0010543649 *Drawing available*

WPI Acc no: 2001-146677/200115

XRPX Acc No: N2001-107380

**Method for completing transaction for investment instrument in e.g. financial market, electronic commerce, involves executing order for investment instrument when there is confirmation of conditions**

Patent Assignee: SABOT ASSOC INC (SABO-N)

Inventor: SABOT G

Patent Family ( 3 patents, 90 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2000065515	A2	20001102	WO 2000US11368	A	20000428	200115	B
AU 200046722	A	20001110	AU 200046722	A	20000428	200115	E
EP 1181656	A2	20020227	EP 2000928485	A	20000428	200222	E
			WO 2000US11368	A	20000428		

Priority Applications (no., kind, date): US 1999131864 P 19990428

#### Alerting Abstract WO A2

NOVELTY - The method involves executing an order for an investment **instrument** when there is confirmation of a set of conditions after the set of conditions, within which the order for the investment **instrument** might be executed, is defined.

DESCRIPTION - Either the confirmation of the conditions within which the order for investment **instrument** might be executed, or a revised set of conditions within which the order for investment **instrument** might be executed is elicited based on current conditions after obtaining information in a market (110) regarding current conditions for the investment **instrument**. An INDEPENDENT CLAIM is also included for a system for completing transaction for investment **instrument** in e.g. financial market, electronic commerce.

USE - For completing transaction for investment **instrument** in e.g. financial market, electronic commerce.

ADVANTAGE - Completes transaction for investment **instrument** with greater efficiency. Provides greater flexibility and efficiency in submitting **limit orders** to a market. Enables submission of multiple, alternative **limit orders**, thereby increasing efficiency of market. Accumulates or reduces **amount** of investment **instrument** available. Enables reception of payment for **completing** the transaction.

DESCRIPTION OF DRAWINGS - The figure shows the block diagram of the system for completing transaction for investment **instrument**.

110 Market

**Title Terms** /Index Terms/Additional Words: METHOD; COMPLETE; TRANSACTION; INVESTMENT; **INSTRUMENT**; FINANCIAL; MARKET; ELECTRONIC; EXECUTE; ORDER; CONFIRM; CONDITION

#### Dialog eLink: [Order File History](#)

21/5/6 (Item 6 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0010370603 *Drawing available*

WPI Acc no: 2000-686724/200067

Related WPI Acc No: 2000-686721

XRFX Acc No: N2000-507775

**Trading orders processing method for computerized trading market, involves pruning portions of trading orders and processing remaining orders to determine trading quantities and pieces**

Patent Assignee: STATE STREET CORP (STRE-N)

Inventor: GILLOT E C; HOWIESON A W; JOHNSTON W W; YNDESTAD K R

Patent Family ( 2 patents, 88 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2000048113	A1	20000817	WO 2000US3597	A	20000211	200067	B
AU 200033620	A	20000829	AU 200033620	A	20000211	200067	E

Priority Applications (no., kind, date): US 1999119888 P 19990212; US 1999133102 P 19990507

#### Alerting Abstract WO A1

**NOVELTY** - A portion of trading orders, received during preset period and which do not have one or more contra trading are pruned after which another portion is pruned if credit limit associated with the orders is exceeded. The remaining orders are processed to determine trading quantities and prices to assign to the offers.

**DESCRIPTION** - The credit limit is either a firm credit limit, trader credit limit or broker credit limit. **INDEPENDENT CLAIMS** are also included for the following:

- A. computer processing system;
- B. program product;
- C. trading interface operating method;
- D. trading interface operating computer processing system

**USE** - For processing trading orders for computerized trading market involving items such as securities, **futures**, fixed income security **instruments** (e.g. treasury **instruments**, agency **instruments**, corporate **instruments**, mortgage pool securities, ARMs, collateralized mortgage obligations, **loan** securities), **commodities**, agricultural **products**, etc.

**ADVANTAGE** - The processing method can be implemented in hardware or software or both. Trading is performed effectively and efficiently.

**DESCRIPTION OF DRAWINGS** - The figure illustrates the pruning of orders.

**Title Terms** /Index Terms/Additional Words: **TRADE; ORDER; PROCESS; METHOD; MARKET; PRUNE ; PORTION; REMAINING; DETERMINE; QUANTITY; PIECE**

**Dialog eLink:** [Order File History](#)

23/5/1 (Item 1 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0013690692

WPI Acc no: 2003-787578/200374

Related WPI Acc No: 2003-327388

XRPX Acc No: N2003-631098

**Discount determining method, involves executing single security by investor and optimizing order placement by taking interaction between orders and currently held securities into account**

Patent Assignee: PENDELTON TRADING SYSTEMS INC (PEND-N)

Inventor: HARRIGAN H T; WALD J K

Patent Family ( 1 patents, 1 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20030182224	A1	20030925	US 1998100381	P	19980915	200374	B
			US 1999396647	A	19990915		
			US 2002316165	A	20021210		

Priority Applications (no., kind, date): US 1998100381 P 19980915; US 1999396647 A 19990915; US 2002316165 A 20021210

**Alerting Abstract** US A1

**NOVELTY** - The method involves executing a single security by an investor. When a principal order is placed, the order is executed at a start of a trade period at a current principal price. At the end of the trade period the performance is evaluated based on a terminal evaluation price. The order placement is optimized by taking the interaction between orders and currently held securities into account.

**DESCRIPTION** - An **INDEPENDENT CLAIM** is also included for a computer readable medium.

**USE** - Used for securities trading e.g. United States equity market.



**ADVANTAGE** - The method maximizes the expected gains associated with trading and gives individual beliefs about security returns and variance, risk aversion and portfolio investment goals. The method provides information regarding adverse selection costs of using discounted, uncertain orders.

**Title Terms /Index Terms/Additional Words:** DISCOUNT; DETERMINE; METHOD; EXECUTE; SINGLE ; SECURE; OPTIMUM; ORDER; PLACE; INTERACT; CURRENT; HELD; ACCOUNT

**Dialog eLink:** [Order File History](#)

23/5/2 (Item 2 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0013242243

WPI Acc no: 2003-327388/200331

Related WPI Acc No: 2003-787578

XRFX Acc No: N2003-261681

**Discount determination method for security trading, involves substituting parameters such as expected value in equity function in column vectors ( $W_{non-trade}$ ) and ( $W_{trade}$ ) in specific equation**

Patent Assignee: PENDELTON TRADING SYSTEMS INC (PEND-N)

Inventor: HERRIGAN H T; WALD J K

Patent Family ( 1 patents, 1 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 6493682	B1	20021210	US 1998100381	P	19980915	200331	B
			US 1999396647	A	19990915		

Priority Applications (no., kind, date): US 1998100381 P 19980915; US 1999396647 A 19990915

**Alerting Abstract** US B1

**NOVELTY** - The discount on investment between a time  $t$  and  $t+1$ , is determined by substituting the parameters such as expected value of the utility function and column vectors ( $W_{non-trade}$ ) and ( $W_{trade}$ ) whose elements represent dollar values of each security already in investor's possession in specific equation. Discount is determined such that the expected utility of wealth of investor is maximized.

**DESCRIPTION** - An INDEPENDENT CLAIM is included for computer readable recording medium storing instructions for discount determination method.

**USE** - For securities trading in stock exchange equity markets. Also used for dynamic controlling of cost.

**ADVANTAGE** - Enables investor to determine an optimal order strategy for maximizing profit by determining discount when investment is made immediately and when investment is made after a period of time.

**Title Terms /Index Terms/Additional Words:** DISCOUNT; DETERMINE; METHOD; SECURE; TRADE; SUBSTITUTE; PARAMETER; VALUE; FUNCTION; COLUMN; VECTOR; SPECIFIC; EQUATE

**Dialog eLink:** [Order File History](#)

23/5/3 (Item 3 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0012715394 *Drawing available*

WPI Acc no: 2002-567149/200261

XRFX Acc No: N2002-448965

**Extended-precision arithmetic fused-processor for executing multiply-add floating-point instructions has multiplier,**

**adder, normalizer and rounder logic circuits**

Patent Assignee: IBM CANADA LTD (IBM); INT BUSINESS MACHINES CORP (IBM)

Inventor: ENENKEL R F; FLEISCHER B M; GUSTAVSON F G; MOREIRA J E

Patent Family ( 3 patents, 2 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
CA 2327924	A1	20020608	CA 2327924	A	20001208	200261	B
US 20020107900	A1	20020808	US 2001918814	A	20010731	200262	E
US 6842765	B2	20050111	US 2001918814	A	20010731	200505	E

Priority Applications (no., kind, date): CA 2327924 A 20001208

**Alerting Abstract CA A1**

NOVELTY - Fused processor executes multiply-add instruction on  $A*B+C$  (53) to calculate result D that is a canonical-form extended-precision floating point **number** with higher and lower **order** components. In post-adder data path, normalizer and rounder (159) have data width sufficient to represent post-adder intermediate results to permit high and low order words of correctly-rounded result D to be computed. Mantissas of result is stored in double-precision registers.

DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

1. a method for computing the mantissa of a canonical form extended-precision number for the result D for the multiply-add instruction ( $A*B+C$ ),
2. in a fused multiply-add processor, an improvement for outputting the mantissa of a canonical form extended-precision number for the result D for the multiply-add instruction ( $A*B+C$ ),
3. an improved fused multiply-add processor

USE - For performing a multiply-add instruction in fused-processors.

ADVANTAGE - The processor can be easily integrated with existing processors and arithmetic operations can be executed in hardware and not just in software.

DESCRIPTION OF DRAWINGS - The block diagram represents the architecture of a processor for executing arithmetic operations.

53 Data inputs

159 Normalizer and rounder

**Title Terms** /Index Terms/Additional Words: EXTEND; PRECISION; ARITHMETIC; FUSE; PROCESSOR; EXECUTE; MULTIPLICATION; ADD; FLOAT; POINT; INSTRUCTION; MULTIPLIER; ADDER; NORMALISE; ROUND; LOGIC; CIRCUIT

**Dialog eLink: [Order File History](#)**

23/5/4 (Item 4 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0010947367 *Drawing available*

WPI Acc no: 2001-570132/200164

XRPX Acc No: N2001-424879

**Chart for representing stock selling and buying order data in stock exchange company, has stock number portion which starts at each price limit plot and extends along abscissa axis**

Patent Assignee: IIDA K (IIDA-I); IIDA T (IIDA-I); KENTEX KK (KENT-N)

Inventor: IIDA K; IIDA T

Patent Family ( 4 patents, 2 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
US 20010014874	A1	20010816	US 2001776628	A	20010206	200164	B
JP 2001222591	A	20010817	JP 200029647	A	20000207	200164	E
JP 2003178189	A	20030627	JP 200029647	A	20000207	200351	E
			JP 2002297671	A	20000207		
JP 3765958	B2	20060412	JP 200029647	A	20000207	200626	E

Priority Applications (no., kind, date): JP 200029647 A 20000207; JP 2002297671 A 20000207

#### Alerting Abstract US A1

NOVELTY - A price range portion (10) is formed by a segment (4) joining a current price plot (1) and price limit plots (2a-2d) along the ordinate axis. A stock number represents portion (20) starting at each price limit plot, extends along the abscissa axis in accordance with the number of stocks corresponding to each price limit.

USE - For representing stock selling and buying order data in stock exchange company or securities company.

ADVANTAGE - Easily represents the distribution of asked and bid prices for stocks of any particular brand, based on selling and buying orders, in a visually recognizable way. The chart represents information based on stock dealing data, in a single compact diagram.

DESCRIPTION OF DRAWINGS - The figure explains the chart.

1 Current price plot

2a-2d Price limit plots

4 Segment

10 Price range portion

20 Stock number representing portion

**Title Terms** /Index Terms/Additional Words: CHART; REPRESENT; STOCK; SELL; BUY; ORDER; DATA; EXCHANGE; COMPANY; NUMBER; PORTION; START; PRICE; LIMIT; PLOT; EXTEND ; ABSCISSA; AXIS

#### Dialog eLink: [Order File History](#)

23/5/5 (Item 5 from file: 350)

DIALOG(R)File 350: Derwent WPIX

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0010914594 *Drawing available*

WPI Acc no: 2001-535957/200159

XRFX Acc No: N2001-398055

**Quotes handling method for financial trading system, involves formatting quote as marketable liability order and routing order, to participant whose quote is locked**

Patent Assignee: NASDAQ STOCK MARKET INC (NASD-N)

Inventor: KETCHUM R G; MALITZIS J; MARTYN P; SERKIN S; MARYTN P

Patent Family ( 4 patents, 93 countries )							
Patent Number	Kind	Date	Application Number	Kind	Date	Update	Type
WO 2001022332	A2	20010329	WO 2000US26148	A	20000922	200159	B
AU 200077108	A	20010424	AU 200077108	A	20000922	200159	E
EP 1323083	A2	20030702	EP 2000966821	A	20000922	200344	E
			WO 2000US26148	A	20000922		
US 7209896	B1	20070424	US 1999401892	A	19990923	200729	E

Priority Applications (no., kind, date): US 1999401892 A 19990923

#### **Alerting Abstract WO A2**

NOVELTY - The quote is formatted as a marketable liability order and the order is routed to a market participant whose quote is locked. It is detected whether a market participant enters an order.

DESCRIPTION - An INDEPENDENT CLAIM is also included for quotes handling system.

USE - For financial trading system.

ADVANTAGE - The quote is managed as a marketable **limit order** and is subjected to reformatted order as a non-directed liability order for execution in time priority.

DESCRIPTION OF DRAWINGS - The figure shows the flowchart of lock manager.

**Title Terms** /Index Terms/Additional Words: HANDLE; METHOD; FINANCIAL; TRADE; SYSTEM; FORMAT; MARKET; LIABLE; ORDER; ROUTE; PARTICIPATING; LOCK

**Dialog eLink:** [Order File History](#)

23/5/12 (Item 1 from file: 347)

DIALOG(R)File 347: JAPIO

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09424637 \*\*Image available\*\*

#### **FINANCIAL PRODUCT TRANSACTION MANAGEMENT APPARATUS AND PROGRAM**

**Pub. No.:** 2008-130002 [JP 2008130002 A ]

**Published:** June 05, 2008 (20080605)

**Inventor:** YAMAMOTO HISATOSHI

AIBA HITOSHI

**Applicant:** MONEYSQUARE JAPAN INC

**Application No.:** 2006-316942 [JP 2006316942]

**Filed:** November 24, 2006 (20061124)

**International Patent Class (v8 + Attributes)**

**IPC + Level Value Position Status Version Action Source Office:**

G06Q-0040/00 A I F B 20060101 20080509 H JP

#### **ABSTRACT**

**PROBLEM TO BE SOLVED:** To improve the convenience of customers by enabling the customers to perform a plurality of if done orders without complicated order procedures in **limit orders** for financial products.

**SOLUTION:** An order information generation part 16 of an order information transaction management apparatus 1 generates an order information group for performing limit-ordering of a plurality of financial products of the same type by an if done order according to the single trading order application information. A contract information generation part 14 contracts for the financial products according to a first priority for forming one order information group and order information of a second priority. When the contract is completed, the order information generation part 16 generates a new order information group, and the contract information generation part 14 performs a contract according to the new order information group. A generation process of the order information group and a contract process of the **order** information are repeated for the **number** of times set in the trading order application information.

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**Dialog eLink:** [Order File History](#)

23/5/14 (Item 3 from file: 347)

DIALOG(R)File 347: JAPIO

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08796635 \*\*Image available\*\*

**EXECUTION PROBABILITY CALCULATION SYSTEM, AND EXECUTION PROBABILITY CALCULATION PROGRAM FOR LIMIT ORDER**

**Pub. No.:** 2006-189995 [JP 2006189995 A ]

**Published:** July 20, 2006 (20060720)

**Inventor:** TANAKA TAKAHIRO

KATO DAIKI

**Applicant:** NOMURA RESEARCH INSTITUTE LTD

**Application No.:** 2005-000074 [JP 200574]

**Filed:** January 04, 2005 (20050104)

**International Patent Class (v8 + Attributes)**

**IPC + Level Value Position Status Version Action Source Office:**

G06Q-0040/00

A I F B 20060101 20060623 H JP

**ABSTRACT**

**PROBLEM TO BE SOLVED:** To provide a technique for calculating an execution probability of a **limit order** by creating a probability model accurately reflecting a market trend.

**SOLUTION:** In the execution probability calculation system, execution information and quotation information of a securities exchange are stored in a **market data storing part**, **limit order** information is extracted on the basis of time series change of quotation information and stored in a **limit order** DB, determination of execution, cancellation, unexecution of each **limit order** is carried out on the basis of the execution information and cancel information and a determination result is stored in a determination result DB, predetermined attribute information relevant to executed and unexecuted **limit orders** is calculated on the basis of the information of the market data storing part, remaining time of trading relevant to each **limit order** is calculated, the determination result of **execution**/unexecution relevant to each **limit order**, its **quantity**, the remaining time, and the attribute information are statistically **processed** to create the probability model per brand, and the probability model corresponding to the current attribute information, the remaining time of trading, and the **quantity** of the **limit order** is applied to calculate the probability.

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28/5/1 (Item 1 from file: 35)

DIALOG(R)File 35: Dissertation Abs Online

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01747837 ORDER NO: AADAA-I9978456

**Two essays in empirical market microstructure**

**Author:** Jakob, Keith Jesse

**Degree:** Ph.D.

**Year:** 2000

**Corporate Source/Institution:** The University of Utah ( 0240 )

**Adviser:** Avner Kalay

**Source:** Volume 6106A of Dissertations Abstracts International.

PAGE 2402 . 86 PAGES

**Descriptors:** ECONOMICS, FINANCE

**Descriptor Codes:** 0508

**ISBN:** 0-599-84224-5

This dissertation contains two empirical market-microstructure essays. Both incorporate information from the TORQ database but are otherwise unrelated and deal with separate issues in the finance literature. The first essay empirically examines an existing asymmetric information model from the microstructure literature. The second essay examines the order arrival process around dividends.

The first essay examines changes in liquidity associated with trading and periods of voluntary lack of trade. We present evidence consistent with the hypothesis that trades "consume" liquidity. We corroborate the Kalay and Rosenfeld (1996) result that transactions widen bid-ask spreads and periods without trade are associated with their narrowing. We examine the relative importance of two explanations for this spread narrowing regularity. First, we find evidence of "book building"—i.e., incoming **limit orders** and competing **quotes** are **partially** responsible for spread narrowing. Second, we find evidence supporting Easley and O'Hara (1992). The evidence indicates that market makers infer from voluntary lack of trade a reduced probability of informed trading. Reassessment of the informational environment obliges the competitive market maker to narrow spreads.

The second essay examines the order arrival process around dividends. Historically, stock prices drop by less than the dividend on the ex-date. According to Elton and Gruber (1970), a higher tax on dividends than capital gains **results** in the smaller price drop. However, **measurement** error associated with the price drop has been documented for expected daily returns and excessive risk on the ex-day. We expand this list of measurement errors. Our measurement error hypothesis states that the bid-ask spread, and order imbalances on ex-days, may help explain the price drop anomaly. We test our hypothesis by examining order flow around ex-days. We find evidence of excess numbers of buy orders on ex-days, along with no significant excess buy order verses sell order dollar volume. These **results** support the existence of order imbalance **measurement** errors in ex-day closing prices. We also provide an alternative rationale for the dividend yield and price drop to dividend anomaly. Our explanation for this relationship is consistent with the measurement error hypothesis and with our findings of ex-day order imbalances.

28/5/2 (Item 1 from file: 2)

DIALOG(R)File 2: INSPEC

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07452941

**Title:** Artificial neural networks for volatility models

**Author(s):** Capobianco, E.<sup>1</sup>

**Affiliation(s):**

<sup>1</sup> Stanford Univ., CA, USA

**Journal:** Badania Operacyjne i Decyzje , no.2 , pp.15-25

**Publisher:** Wydawnictwo Politech. Wroclawskiej

**Country of Publication:** Poland

**Publication Date:** 1999

**ISSN:** 1230-1868

**ISSN Type:** print

**SICI:** 1230-1868(1999)2L:15:ANNV;1-3

**CODEN:** BODEEF

**Language:** English

**Document Type:** Journal Paper (JP)

**Treatment:** Theoretical or Mathematical (T)

**Abstract:** This paper presents an extension to backpropagation networks for financial time series prediction. We want a network that uses the information carried by the first and second order conditional moments of the distribution of interest, so as to combine its built-in nonlinear features with the typical dependence implied by ARCH-type and stochastic volatility models, whose effects must be estimated. A likelihood-type **performance measure** is discussed and learning schemes are suggested for conditionally Gaussian models. ( 11 refs.)

**Subfile(s):** C (Computing & Control Engineering); E (Mechanical & Production Engineering)

**Descriptors:** backpropagation; finance; forecasting theory; neural nets; time series  
**Identifiers:** artificial neural networks; backpropagation networks; financial time series prediction; first-order conditional moments; second-order conditional moments; built-in nonlinear features; ARCH-type volatility models; stochastic volatility models; likelihood-type performance measure; learning schemes; conditionally Gaussian models  
**Classification Codes:** C1290D (Systems theory applications in economics and business); C7120 (Financial computing); C1140Z (Other topics in statistics); C1230D (Neural nets); C5290 (Neural computing techniques); C1230L (Learning in AI); C1240 (Adaptive system theory); E0210J (Statistics); E0220 (Economics); E0410F (Business applications of IT); E1540 (Systems theory applications)  
**International Patent Classification:**  
**G06Q-0030/00** (Commerce, e.g. marketing, shopping, billing, auctions or e-commerce)  
**G06Q-0040/00** (Finance, e.g. banking, investment or tax processing; Insurance, e.g. risk analysis or pensions)  
**INSPEC Update Issue:** 2000-001  
**Copyright:** 2000, IEE

28/5/3 (Item 2 from file: 2)  
DIALOG(R)File 2: INSPEC  
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07027745

**Title:** Optimal ordering method for coupling point production control system

**Author(s):** Mitsukuni, K.; Tsushima, I.; Komoda, N.

**Affiliation(s):**

<sup>1</sup> Bus. & Inf. Syst., Hitachi Ltd., Yokohama, Japan

**Book Title:** IEEE International Symposium on Industrial Electronics. Proceedings. ISIE'98 (Cat. No.98TH8357)

**Inclusive Page Numbers:** 568-72 vol.2

**Publisher:** IEEE, New York, NY

**Country of Publication:** USA

**Publication Date:** 1998

**Conference Title:** IEEE International Symposium on Industrial Electronics. Proceedings. ISIE'98

**Conference Date:** 7-10 July 1998

**Conference Location:** Pretoria, South Africa

**Conference Sponsor:** IEEE Ind. Electron. Soc. Univ. Pretoria Soc. Instrum. & Control Eng. (Japan) South African Council for Autom. & Comput. South African Inst. Meas. & Control South African Inst. Electr. Eng

**ISBN:** 0-7803-4756-0

**U.S. Copyright Clearance Center Code:** 0 7803 4756 0/98/\$10.00

**Item Identifier (DOI):** [10.1109/ISIE.1998.711664](https://doi.org/10.1109/ISIE.1998.711664)

**Part:** vol.2

**Number of Pages:** 2 vol. xvii+736

**Language:** English

**Document Type:** Conference Paper (PA)

**Treatment:** Application (A); Practical (P)

**Abstract:** In the coupling point production system (CPPS), inventories are concentrated at the position where supply lead time and demand lead time are equal. Inventory and production planning are made at this position. This position is defined as the "coupling point" (CP). In a CPPS, different products may have the same coupling point on the same production line. The authors propose an optimal ordering method (OOM for CPPS) to prevent running out of stock and to limit re-order quantities. This new method has been applied to a window frame manufacturing process successfully. (14 refs.)

**Subfile(s):** C (Computing & Control Engineering); E (Mechanical & Production Engineering)

**Descriptors:** computer aided production planning; optimal control; production control; stock control data processing

**Identifiers:** coupling point production control system; inventory controls; production planning; production line; optimal ordering method; stock management; re-order quantities limitation; manufacturing process

**Classification Codes:** C7480 (Production engineering computing); C7420 (Control engineering computing); C7160 (Manufacturing and industrial administration); C3350 (Control in industrial production systems); C1330 (Optimal control); E0410D (Industrial applications of IT); E1010 (Production management); E1550 (Control technology and theory)

**International Patent Classification:**

G05B-0015/00 (Systems controlled by a computer)

**G06Q-0050/00** ( Systems or methods specially adapted for a specific business sector, e.g. health care, utilities, tourism or legal services)

**INSPEC Update Issue:** 1998-037

**Copyright:** 1998, IEE

28/5/4 (Item 3 from file: 2)

DIALOG(R)File 2: INSPEC

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06818660

**Title:** Next-generation securities market systems: an experimental investigation of quote-driven and order-driven trading

**Author(s):** Schwartz, R.A.<sup>1</sup>; Weber, B.W.

**Affiliation(s):**

<sup>1</sup> City Univ. of New York, NY, USA

**Journal:** Journal of Management Information Systems , vol.14 , no.2 , pp.57-79

**Publisher:** M.E. Sharpe

**Country of Publication:** USA

**Publication Date:** Fall 1997

**ISSN:** 0742-1222

**ISSN Type:** print

**SICI:** 0742-1222(199723)14:2L:57:NGSM;1-2

**CODEN:** JMISEB

**U.S. Copyright Clearance Center Code:** 0742-1222/97/\$9.50+0.00

**Language:** English

**Document Type:** Journal Paper (JP)

**Treatment:** Practical (P); Experimental (X)

**Abstract:** Several major securities markets including Nasdaq in the United States and the London Stock Exchange's SEAQ are organized as dealer markets that use computer screen displays of competitive dealer quotes to establish fair trade prices.

To improve their markets and to reduce investors' trading costs, these exchanges are introducing new rules and systems for handling investors' orders. The redesign of a market structure raises important strategic issues for exchanges; more attractive trading mechanisms will increase order flow and improve liquidity, but margins and total profits earned by traditional exchange intermediaries may be reduced. To examine the consequences of market structure changes, we conducted experimental tests of the integration of an order-driven trading system into a dealer/quote-driven market. Using computer-based simulations of a stock market, experimental subjects traded using a traditional dealer quote screen to which a public limit order facility was added. Data captured on subjects' trading decisions revealed that the limit order system was used by the subjects, attracting some orders that would have otherwise gone to dealers, and lowered investor trading costs. The integration of limit orders reduced dealers' activities as a percentage of total market volume and lowered dealers' trading margins, except in a special "informed dealer" case. ( 17 refs.)

**Subfile(s):** C (Computing & Control Engineering); E (Mechanical & Production Engineering)

**Descriptors:** costing; digital simulation; economics; electronic trading; investment ; securities trading

**Identifiers:** next-generation securities market systems; experimental investigation; quote-driven trading; order-driven trading; Nasdaq; United States; London Stock Exchange; SEAQ; computer screen displays; fair trade price; trading costs; market structure; order flow; computer-based simulations; stock market; limit order system

**Classification Codes:** C7120 (Financial computing); E0410F (Business applications of IT)

**International Patent Classification:**

**G06Q-0030/00** (Commerce, e.g. marketing, shopping, billing, auctions or e-commerce)

**G06Q-0040/00** (Finance, e.g. banking, investment or tax processing; Insurance, e.g. risk analysis or pensions)

**INSPEC Update Issue:** 1998-005

**Copyright:** 1998, IEE



28/5/5 (Item 4 from file: 2)  
DIALOG(R)File 2: INSPEC  
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06170482

**Title:** Dynamic path-based branch correlation

**Author(s):** Nair, R.<sup>1</sup>

**Affiliation(s):**

<sup>1</sup> IBM Thomas J. Watson Res. Center, Yorktown Heights, NY, USA

**Book Title:** Proceedings of the 28th Annual International Symposium on Microarchitecture (Cat. No.95TB100012)

**Inclusive Page Numbers:** 15-23

**Publisher:** IEEE Comput. Soc. Press, Los Alamitos, CA

**Country of Publication:** USA

**Publication Date:** 1995

**Conference Title:** Proceedings of MICRO'95: 28th Annual IEEE/ACM International Symposium on Microarchitecture

**Conference Date:** 29 Nov.-1 Dec. 1995

**Conference Location:** Ann Arbor, MI, USA

**Conference Sponsor:** IEEE Tech. Committee on Microprogramming & Microarchit. ACM - SIGMICRO

**ISBN:** 0-8186-7351-6

**U.S. Copyright Clearance Center Code:** 1072-4451/95/\$4.00

**Item Identifier (DOI):** [10.1109/MICRO.1995.476809](https://doi.org/10.1109/MICRO.1995.476809)

**Number of Pages:** xiv+361

**Language:** English

**Document Type:** Conference Paper (PA)

**Treatment:** Experimental (X)

**Abstract:** Misprediction of conditional branches is a major cause for reduced performance in processor implementations with large numbers of functional units. We present a hardware scheme which records the path leading to a **conditional** branch in **order** to predict the outcome of the branch instruction more accurately. The proposed scheme is analyzed using instruction traces from integer **benchmark** programs. The **results** indicate that knowledge of path information leads to better prediction than knowledge of simply the previous branch outcomes for a given number of history items. The results further show that even for equivalent hardware cost, path-based correlation often outperforms patient-based correlation, especially when history information is periodically destroyed, for example, due to context switches. (19 refs.)

**Subfile(s):** C (Computing & Control Engineering)

**Descriptors:** computer architecture; performance evaluation; program diagnostics

**Identifiers:** branch correlation; conditional branches; **performance**; branch instruction; instruction traces; integer **benchmark** programs; equivalent hardware cost; path-based correlation; context switches

**Classification Codes:** C6150G (Diagnostic, testing, debugging and evaluating systems); C5470 (Performance evaluation and testing); C5220 (Computer architecture)

**International Patent Classification:**

G06F-0011/34 (Recording or statistical evaluation of computer activity, e.g. of down time, of input/output operation)

G06F-0011/36 (Preventing errors by testing or debugging of software)

G06F-0015/76 (Architectures of general purpose stored programme computers)

**INSPEC Update Issue:** 1996-003

**Copyright:** 1996, IEE

28/5/6 (Item 5 from file: 2)  
DIALOG(R)File 2: INSPEC  
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05805486

**Title:** Minimal splitting posting in conditional planning

**Author(s):** Marcugini, S.<sup>1</sup>

**Affiliation(s):**

<sup>1</sup> Dipartimento di Matematica, Perugia Univ., Italy

**Book Title:** Romanian Symposium on Computer Science. 9th Symposium, ROSYCS'93. Proceedings

**Inclusive Page Numbers:** 348-58

**Publisher:** Univ. Al.I. Cuza, Iasi

**Country of Publication:** Romania

**Publication Date:** 1993

**Conference Title:** Proceedings of 9th Romanian SYmposium on Computer Science'93

**Conference Date:** 12-13 Nov. 1993

**Conference Location:** Iasi, Romania

**Editor(s):** Felea, V. Ciobanu, G.

**Number of Pages:** vi+565

**Language:** English

**Document Type:** Conference Paper (PA)

**Treatment:** Practical (P)

**Abstract:** We describe a representation formalism used in **conditional planners in order** to reduce the **amount** of computation required to manage conditional branches. The **alt operator** is used to build conditional formulas, i.e. formulas which describe sets of situations, and some useful properties are also given. Conditional formulas are a powerful representation tool that allow one to represent sets of situations avoiding explicit combinatorial representation. The state transition function, add, is then defined which operates on conditional formulas. The defined state transition function is equivalent to the semantic of actions execution of most classical deterministic and conditional planners. Moreover, it allows one to compute multiple situations from multiple situations. A general strategy of minimal splitting posting for conditional planner is finally introduced. Conditional formulas are used to keep the search space and plan representation as small as possible while splitting on conditional branches is avoided if not pertinent to the problem at hand. (18 refs.)

**Subfile(s):** C (Computing & Control Engineering)

**Descriptors:** inference mechanisms; knowledge representation; planning (artificial intelligence); uncertainty handling

**Identifiers:** knowledge representation; uncertainty; interactive planning; conditional planning; representation formalism; conditional planners; conditional branches; alt operator; conditional formulas; state transition function; add; semantic of actions execution; multiple situations; minimal splitting posting; search space

**Classification Codes:** C6170 (Expert systems and other AI software and techniques); C1230 (Artificial intelligence)

**International Patent Classification:**

**G06F-0015/18** (In which a programme is changed according to experience gained by the computer itself during a complete run; Learning machines)

**G06N-0005/00** (Computer systems utilizing knowledge based models)

**INSPEC Update Issue:** 1994-044

**Copyright:** 1994, IEE

28/5/7 (Item 6 from file: 2)

DIALOG(R)File 2: INSPEC

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05524867

**Title:** Auctions as algorithms: computerized trade execution and price discovery

**Author(s):** Domowitz, I.<sup>1</sup>; Wang, J.<sup>1</sup>

**Affiliation(s):**

<sup>1</sup> Northwestern Univ., Evanston, IL, USA

**Journal:** Journal of Economic Dynamics and Control, vol.18, no.1, pp.29-60

**Country of Publication:** Netherlands

**Publication Date:** Jan. 1994

**ISSN:** 0165-1889

**ISSN Type:** print

**SICI:** 0165-1889(199401)18:1L:29:AACT;1-2

**CODEN:** JEDCDH

**U.S. Copyright Clearance Center Code:** 0165-1889/94/\$06.00

**Language:** English

**Document Type:** Journal Paper (JP)

**Treatment:** Practical (P); Theoretical or Mathematical (T)

**Abstract:** Computerized auction systems are introduced as a new form of market institution, characterized by communications technologies for passing messages between traders and a set of programmed rules that restrict the message space and process messages into **transactions prices and quantities**. The stationary distributions of price **quotations and transactions prices**, given order arrival rates conditioned on information available through the **limit order book**, are derived for an automated continuous auction system with price and time priority rules. The key to the analysis is the application of the theory of queues with preemptive priorities to the problem of two interactive queues. The model then is used to characterize the structure of the electronic order book in terms of the distributions of the **number of buy and sell orders** in the system and the waiting time to trade **execution**. The theoretical development is applied to a comparison of automated continuous and periodic single-price auctions, with respect to price volatility, the magnitude of the **bid-ask spread**, and **volume traded** per unit of time. ( 28 refs.)

**Subfile(s):** C (Computing & Control Engineering); E (Mechanical & Production Engineering)

**Descriptors:** electronic trading; queueing theory

**Identifiers:** electronic trading; financial markets; **transaction quantity**; price priority rules; queueing theory; computerized trade **execution**; price discovery; transactions prices; automated continuous auction system; time priority rules; electronic order book; periodic single-price auctions; price volatility; bid-ask spread

**Classification Codes:** C7120 (Financial computing); C1290D (Systems theory applications in economics and business); C1140C (Queueing theory); E0210J (Statistics); E0220 (Economics); E0410F (Business applications of IT); E1540 (Systems theory applications)

**International Patent Classification:**

G06Q-0030/00 (Commerce, e.g. marketing, shopping, billing, auctions or e-commerce)

G06Q-0040/00 (Finance, e.g. banking, investment or tax processing; Insurance, e.g. risk analysis or pensions)

**INSPEC Update Issue:** 1993-045

**Copyright:** 1993, IEE

28/5/8 (Item 7 from file: 2)

DIALOG(R)File 2: INSPEC

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05084944

**Title:** Extension of a CAD system towards an integrated general system

**Author(s):** Jasper, T.

**Journal:** ZWF Zeitschrift für Wirtschaftliche Fertigung und Automatisierung , vol.86 , no.12 , pp.CA266-9

**Country of Publication:** Germany

**Publication Date:** Dec. 1991

**ISSN:** 0932-0482

**ISSN Type:** print

**CODEN:** ZZWAEM

**Language:** German

**Document Type:** Journal Paper (JP)

**Treatment:** Application (A)

**Abstract:** In production works with a high percentage of product variants and special designs **conditional on orders**, a large amount of design work is necessary. At a Bielefeld machine-tool works, designers are therefore assisted by an interlinked data processing system. Apart from tasks related to design, this system also handles work from the office communication area. The solutions described are part of an information system integrated into the enterprise as a whole. ( 4 refs.)

**Subfile(s):** C (Computing & Control Engineering); E (Mechanical & Production Engineering)

**Descriptors:** CAD/CAM; machine tools; manufacturing computer control; manufacturing data processing

**Identifiers:** CIM; CAD system; machine-tool works; interlinked data processing system; office communication; information system

**Classification Codes:** C7480 (Production engineering computing); C3355C (Control applications in machining processes and machine tools); E0410D (Industrial applications of IT); E1510 (Manufacturing systems); E1520A (Machining)

**International Patent Classification:**

B23 (Machine tools; Metal-working not otherwise provided for)  
B23Q-0015/00 (Automatic control or regulation of feed movement, cutting velocity or position of tool or work)  
G05B-0019/4097 (Characterised by using design data to control nc machines, e.g. cad/cam)  
**G06F-0017/50 (Computer-aided design)**  
**INSPEC Update Issue:** 1992-011  
**Copyright:** 1992, IEE

28/5/9 (Item 8 from file: 2)  
DIALOG(R)File 2: INSPEC  
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05038681

**Title:** Lossless compression of medical images

**Author(s):** Tavakoli, N.<sup>1</sup>

**Affiliation(s):**

<sup>1</sup> Dept. of Comput. Sci., North Carolina Univ., Charlotte, NC, USA

**Book Title:** Computer-Based Medical Systems. Proceedings of the Fourth Annual IEEE Symposium (Cat. No.91CH2951-2)

**Inclusive Page Numbers:** 200-7

**Publisher:** IEEE Comput. Soc. Press, Los Alamitos, CA

**Country of Publication:** USA

**Publication Date:** 1991

**Conference Title:** Computer-Based Medical Systems. Fourth Annual IEEE Symposium

**Conference Date:** 12-14 May 1991

**Conference Location:** Baltimore, MD, USA

**Conference Sponsor:** IEEE

**Editor(s):** Bankman, I.N. Tsitlik, J.E.

**ISBN:** 0-8186-2164-8

**U.S. Copyright Clearance Center Code:** CH2951-2/91/0000-0200\$01.00

**Item Identifier (DOI):** [10.1109/CBMS.1991.128966](https://doi.org/10.1109/CBMS.1991.128966)

**Number of Pages:** x+382

**Language:** English

**Document Type:** Conference Paper (PA)

**Treatment:** Practical (P)

**Abstract:** Lossless compression of magnetic resonance images is reviewed using both the theoretical and implementation models. The compression level of selected algorithms (Lempel-Ziv and Huffman) are compared against the first-order, second-order, and conditional entropies. It is found that the compression upper limit for Huffman is the first-order entropy and for Lempel-Ziv, the second-order or first-order conditional entropies. The experiments showed that the second-order and conditional entropies were lower per pixel than the first-order, suggesting a certain amount of dependencies between the adjacent pixels. As a result, the Lempel-Ziv achieved more compression than the Huffman. The first transformation (difference coding) improves the compression level by 6% for Huffman and 1% for Lempel-Ziv. In a second transformation, where images are split by their upper and lower bytes of each pixel, Lempel-Ziv performs better on the higher byte and Huffman performs better on the lower byte. (16 refs.)

**Subfile(s):** B (Electrical & Electronic Engineering); C (Computing & Control Engineering)

**Descriptors:** computerised picture processing; data compression; magnetic resonance; medical computing

**Identifiers:** magnetic resonance images; compression level; Lempel-Ziv; conditional entropies; compression upper limit; first-order entropy; first-order conditional entropies; difference coding

**Classification Codes:** B6140C (Optical information, image and video signal processing); C7330 (Biology and medical computing); C5260B (Computer vision and image processing techniques); C6130 (Data handling techniques)

**International Patent Classification:**

**G06F-0007/00** (Methods or arrangements for processing data by operating upon the order or content of the data handled)

**G06F-0019/00** (Digital computing or data processing equipment or methods, specially adapted for specific applications)

**G06T** (Image data processing or generation, in general)

**INSPEC Update Issue:** 1992-002

**Copyright:** 1992, IEE

28/5/10 (Item 9 from file: 2)  
DIALOG(R)File 2: INSPEC  
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04668629

**Title:** Order-sorted completion: the many-sorted way

**Author(s):** Ganzinger, H.<sup>1</sup>

**Affiliation(s):**

<sup>1</sup> Fachbereich Inf., Dortmund Univ., West Germany

**Book Title:** TAPSOFT '89. Proceedings of the International Joint Conference on Theory and Practice of Software Development. Vol.1: Advanced Seminar on Foundations of Innovative Software Development 1 and Colloquium on Trees in Algebra and Programming (CAAP '89)

**Inclusive Page Numbers:** 244-58

**Publisher:** Springer-Verlag, Berlin

**Country of Publication:** West Germany

**Publication Date:** 1989

**Conference Title:** TAPSOFT '89. International Joint Conference on Theory and Practice of Software Development.: Advanced Seminar on Foundations of Innovative Software Development 1 and Colloquium on Trees in Algebra and Programming (CAAP '89)

**Conference Date:** 13-17 March 1989

**Conference Location:** Barcelona, Spain

**Editor(s):** Diaz, J. Orejas, F.

**ISBN:** 3-540-50939-9

**Number of Pages:** x+383

**Language:** English

**Document Type:** Conference Paper (PA)

**Treatment:** Theoretical or Mathematical (T)

**Abstract:** Order-sorted specifications can be transformed into equivalent many-sorted ones by using injections to implement subsort relations. The author improves a result of Goguen/Jouannaud/Meseguer about the relation between **order-sorted** and **many-sorted** rewriting. He then applies recent techniques in **completion** of many-sorted conditional equations to systems obtained from translating order-sorted conditional equations. **Emphasis** is on ways to overcome some of the problems with non-sort-decreasing rules. ( 26 refs.)

**Subfile(s):** C (Computing & Control Engineering)

**Descriptors:** formal logic; formal specification; logic programming; rewriting systems

**Identifiers:** **many** sorted equational logic; algebraic specification; **order** sorted equational logic; logic programming; **order** sorted specification; **many-sorted** rewriting; **many-sorted conditional** equations; **order-sorted** conditional equations; non-sort-decreasing rules

**Classification Codes:** C4240 (Programming and algorithm theory); C6110B (Software engineering techniques); C4210 (Formal logic)

**International Patent Classification:**

G06F-0009/44 (Arrangements for executing specific programmes)

**INSPEC Update Issue:** 1990-015

**Copyright:** 1990, IEE

28/5/11 (Item 1 from file: 139)  
DIALOG(R)File 139: EconLit  
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390218

**Title:** Dealer versus Auction Markets: A Paired Comparison of Execution Costs on NASDAQ and the NYSE

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**Abstract:** Execution costs, as measured by the quoted spread, the effective spread (which accounts for trades inside the quotes), the realized spread (which measures revenues of suppliers of immediacy), the Roll (1984) implied spread, and the post-trade variability, are twice as large for a sample of NASDAQ stocks as they are for a matched sample of NYSE stocks. The difference is not due to differences in adverse information, in market depth, or in the frequency of even-eighth quotes. Partial explanations are provided by differences in the treatment of limit orders and commissions in the two markets. We conclude that important explanations are the internalization and preferencing of order flow and the presence of alternative interdealer trading systems, factors that limit dealers' incentives to narrow spreads on NASDAQ.

**Geographic Location Descriptor(s):** U.S.

**Regional Interest:** Northern America

**Descriptor(s) (1991 to present):** Asset Pricing; Trading volume; Bond Interest Rates (G120); Firm Organization and Market Structure (L220); NASDAQ; NYSE; Nasdaq; Stocks

## **V. Additional Resources Searched**

Financial Times FullText (via ProQuest): No relevant results.

Internet & Personal Computing Abstracts (via EBSCOhost): No relevant results.